सत्यमेव जयते

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प्रशिक्षण महानिदेशालय
भारत सरकार
कौशल विकास और उद्यमशीलता मंत्रालय
नई दिल्ली–110001

DIRECTORATE GENERAL OF TRAINING
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT &
ENTREPRENEURSHIP
NEW DELHI-110001

No. MSDE(DGT)-19/03(02)/2022-CD **Dated 05th April 2022**

To Dear Colleagues,

1. All State Principal Secretaries/ Secretaries/ of States/UTs dealing Skill Development Program
2. All States/ UTs Commissioners/ Director, Vocational Training / Skill Development,
3. The Directors, NSTIs & RDSDEs

Subject- Simplification of Workshop Calculation & Science (WCS) and Engineering Drawing (ED) syllabus of max. 40 hours each and merging with Trade Theory subject for all engineering trades. Applicable for current session also. Thus, students will not appear for separate ED/ WCS Examinations in July/August 2022 Examinations-reg.

Sir/Madam,

With reference to VC meeting held under the Chairmanship of Secretary MSDE on 10th March 2022 at 12:00 Noon with the State/UT Principal Secretaries/Secretaries of Skill, Sector Skill Councils, Controller of Examinations, RDSDE's and NSTIs wherein simplification of Workshop Calculation & Science (WCS) and Engineering Drawing (ED) syllabus of max. 40 hours each merging with Trade Theory subject for all engineering trades was discussed vide agenda item no. 2 in the meeting and it was unanimously decided that:

i. The revised simplified syllabus will be followed from the current session i.e. the trainees taken admission in year 2021-22 and trainees admitted in current session need not appear for separate examination for WCS and ED.
ii. Separate supplementary examination will be conducted for WCS and ED for the ex-trainees.

Accordingly, State/UTs Directorates dealing with vocational training are kindly requested to issue necessary directions to Principals and Instructors of ITIs to organize workshop/ give wide publicity amongst trainees to encourage them as well as to enable implementations of above decisions.

The copy of revised syllabus of ED and WCS are annexed as Annexure-A and Annexure-B respectively.

With regards,

Yours Sincerely

Encls: A/A

(Atul Kumar Tiwari)

Copy to:

1. Sr. PPS to Secretary, MSDE
2. PPS to DDG, DGT
3. Director TT Cell - to implement CBT accordingly,
4. All Directors at DGT (HQ), New Delhi
5. Director CSTARI and Executive Director, NIMI for necessary action please
6. IT Head, DGT with a request to upload on DGT website

Annexure-A

Revised Engineering Drawing (ED) syllabus of 40 hrs. from 80 hrs. duration for 75 trades in 29 groups under Craftsmen Training Scheme (CTS) applicable from 2021-22 session.

Please note that free hand Engineering Drawing will be assessed as part of Formative assessment while, a few MCQ question on ED will be part of Trade Theory Computer Based Test (CBT).

Also note that for Draughtsman groups of trade, ED will be part of trade practical exam. Changes in their syllabus, if any, will be communicated Separately.

Revised Engineering Drawing (ED) curriculum for 1-year engineering group of trades offered under Craftsmen Training Scheme

Group 1 - Engineering Drawing

CTS Trades Covered: Artisan Using Advanced Tool, Industrial Robotics & Digital Manufacturing Technician, Manufacturing Process Control and Automation

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the related trades.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing related to trades.	8
TOTAL		**40 HRS**

Group 2 - Engineering Drawing

CTS Trades Covered: Solar Technician

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke	4
4.	Dimensioning Practice • Types of arrowhead	2
5.	Symbolic representation – • Different electrical symbols used in the related trade.	4
6.	Reading of Electrical Circuit Diagram	14
7.	Reading of Electrical Layout drawing	8
TOTAL		**40 HRS**

Group 3 - Engineering Drawing

CTS Trades Covered: Domestic Painter, Industrial Painter, Mechanic Auto Body Painting

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	8
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke, double stroke, inclined	12
4.	Dimensioning • Types of arrowhead	10
5.	Symbolic representation – • Different symbols used in the related trade.	8
TOTAL		**40 HRS**

Group 4 - Engineering Drawing

CTS Trades Covered: Welder, Welder (Fabrication & Fitting) , Welder (GMAW & GTAW), Welder (Pipe), Welder (Structural), Welder (Welding & Inspection)

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	4
3.	Lines -Types and applications in drawing	2
4.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke, double stroke, inclined	4
5.	Reading of dimension and Dimensioning Practice.	4
6.	Reading of fabrication drawing, sectional view of different types of welding Joints. Sectional view of different pipe joints	10
7.	Symbolic representation – different symbols used in the related trades	4
8.	Reading of Job Drawing of related trades.	10
	Total	**40**

Group 5 - Engineering Drawing

CTS Trades Covered: Marine Engine Fitter

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Rhombus, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the Marine Engine Fitter trade.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing related to Marine Engine Fitter trade.	8
	Total	**40**

Group 6 - Engineering Drawing

CTS Trades Covered: Pump operator cum Mechanic

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures • Angle, Triangle, Circle, Rectangle, Square, Rhombus, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Reading of dimension and Dimensioning Practice.	4
5.	Symbolic representation – • Different symbols used in the Pump operator cum Mechanic trade.	10
6.	Reading of Job drawing and piping Layout	14
	Total	**40**

Group 7 - Engineering Drawing

CTS Trades Covered: Foundryman

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	10
4.	• Reading of dimension and Dimensioning Practice.	4
5.	Symbolic representation – • Different symbols used in the Foundryman trade.	8
6.	• Basic of Orthographic and Isometric projections • Reading of Job drawing related to Foundryman trade.	10
	Total	**40**

Group 8 - Engineering Drawing

CTS Trades Covered: Mechanic Lens/Prism Grinding

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram, Ellipse & Parabola. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the Mechanic Lens/Prism grinding trade.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing related to Mechanic Lens/Prism grinding trade.	8
	Total	**40**

Group 9 - Engineering Drawing

CTS Trades Covered: Sheet Metal

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of - • Angle, Triangle, Circle, Rectangle, Square, Parallelogram, Ellipse & Parabola. • Lettering & Numbering – Single Stroke. • Development of Surfaces	8
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the Sheet Metal trade.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	10
7.	Reading of Job drawing related to Sheet Metal trade.	8
	Total	**40**

Group 10 - Engineering Drawing

CTS Trades Covered: Plastic Processing Operator

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the Plastic Processing Operator trade.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing related to Plastic Processing Operator trade.	8
	Total	**40**

Group 11 - Engineering Drawing

CTS Trades Covered: Carpenter

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	• Reading of dimension and Dimensioning Practice.	2
5.	• Different joints used in the carpenter trade.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing related to carpenter trade.	8
	Total	**40**

Group 12 - Engineering Drawing

CTS Trades Covered: Mason

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram.	8
4.	• Reading of dimension and Dimensioning Practice.	4
5.	Symbolic representation – • Different symbols used in the trades.	8
6.	Reading of Plan drawing	12
	Total	**40**

Group 13 - Engineering Drawing

CTS Trades Covered: Plumber

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram.	8
4.	• Reading of dimension and Dimensioning Practice.	4
5.	Symbolic representation – • Different symbols and Pipe joints used in the trade.	10
6.	Reading of layout plan drawing in piping	10
	Total	**40**

Group 14 - Engineering Drawing

CTS Trades Covered: Rubber Technician

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	10
4.	• Reading of dimension and Dimensioning Practice.	4
5.	Symbolic representation – • Different symbols used in the Rubber Technician trade.	8
6.	Reading of Job/ process drawing related to Rubber Technician trade.	10
	Total	**40**

Group 15 - Engineering Drawing

CTS Trades Covered: Stone Mining Machine Operator, Stone Processing Machine Operator

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the Stone Mining / Stone Processing Machine Operator trades.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing related to Stone Mining / Stone Processing Machine Operator trades.	8
	Total	**40**

Group 16 - Engineering Drawing

CTS Trades Covered: Warehouse Technician, In Plant Logistics Assistant

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	10
4.	• Reading of dimension and Dimensioning Practice.	4
5.	Symbolic representation – • Different packing and labeling materials used in the trades.	8
6.	Reading of Warehouse layout / Job stacking/ pallet stack drawing plan	10
	Total	**40**

Group 17 - Engineering Drawing

CTS Trades Covered: - Mechanic Auto Body Repair, Mechanic Auto Electrical and Electronics, Mechanic Diesel, Mechanic Tractor, Mechanic Two and Three-wheeler

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the related trades of Mechanic Auto Body Repair / Electrical and Electronics / Diesel / Tractor / Two and Three-wheeler.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing related to Mechanic Auto Body Repair / Electrical and Electronics / Diesel / Tractor / Two and Three-wheeler trades.	8
	Total	**40**

Revised Engineering Drawing (ED) curriculum for 1-year engineering group of trades offered under Craftsmen Training Scheme

Group 18 - Engineering Drawing

CTS Trades Covered: Fitter, Turner, Machinist, Machinist Grinder, Mechanic Machine Tool Maintenance, Operator Advance Machine Tool, TDM (D&M), TDM (J&F), Mechanic Mining Machinery, Technician Mechatronics, Textile Mechatronics, Basic Designer & Virtual Verifier, Advanced CNC machining, Aeronautical Structure & Equipment Fitter

1st -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the related trades.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing of related trades.	8
	Total	**40**

2nd -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Reading of drawing of nuts, bolt, screw thread, different types of locking devices e.g., Double nut, Castle nut, Pin, etc.	6
2.	Reading of foundation drawing	6
3.	Reading of Rivets and rivetted joints, welded joints	6
4.	Reading of drawing of pipes and pipe joints	6
5.	Reading of Job Drawing ,Sectional View & Assembly view	16
	Total	**40**

Group 19-Engineering Drawing		
CTS Trades Covered: Electrician, Wireman, Electroplater, Lift & Escalator Mechanic, Electrician Power Distribution		
1st -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke	4
4.	Dimensioning Practice • Types of arrowhead	2
5.	Symbolic representation – • Different electrical symbols used in the related trades	4
6.	Reading of Electrical Circuit Diagram	14
7.	Reading of Electrical Layout drawing	8
Total		**40**

2nd -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Reading of Electrical Sign and Symbols	4
2.	Sketches of Electrical components	6
3.	Reading of Electrical wiring diagram and Layout diagram Reading of Electrical earthing diagram. Drawing the schematic diagram of plate and pipe earthing.	10
4.	Drawing of Electrical circuit diagram	10
5.	Drawing of Block diagram of Instruments & equipment of trades	10
Total		**40**

Group 20 - Engineering Drawing

CTS Trades Covered: Tech. Medical Electronics, Technician Mechatronics, Technician Power Electronics System, Electronics Mechanic, Mechanic Consumer Electronics Appliances, Tech. Electronic System Design & Repair

1st -Year

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke	4
4.	Symbolic representation – • Different Electronic symbols used in the related trades	4
5.	Reading of Electronic Circuit Diagram	14
6.	Reading of Electronic Layout drawing	10
Total		**40**

2nd -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Reading of Electronics Sign and Symbols	4
2.	Sketches of Electronics components	6
3.	Reading of Electronics wiring diagram and Layout diagram	6
4.	Drawing of Electronics circuit diagram	12
5.	Drawing of Block diagram of Instruments & equipment of trades	12
Total		**40**

Group 21 - Engineering Drawing

CTS Trades Covered: Instrument Mechanic (Chemical Plant), Attendant Operator (Chemical Plant), Laboratory Attendant (Chemical Plant), Maintenance Mechanic (Chemical Plant)

	1st -Year	
Sl. No.	**Topic**	**Time in hrs.**
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke	4
4.	Dimensioning Practice • Types of arrowhead	2
5.	Symbolic representation – • Different symbols used in the related trades	4
6.	Reading of chemical plant Circuit Diagram	14
7.	Reading of Chemical plant Layout drawing	8
Total		40

2nd Year Engg. Drawing not required.

Group 22 - Engineering Drawing

CTS Trades Covered: Spinning Technician, Textile wet processing Technician, Weaving Technician

1st -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke	4
4.	Dimensioning Practice • Types of arrowhead	2
5.	Symbolic representation – • Different symbols used in the Spinning / Textile wet processing /weaving Technician trades.	4
6.	Reading of chemical plant Circuit Diagram	14
7.	Reading of Chemical plant Layout drawing	8
	Total	**40**

2nd Year Engg. Drawing not required.

Group 23 - Engineering Drawing

CTS Trades Covered: Information and Communication Technology System Maintenance, Information Technology

1st -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools.	6
4.	Symbolic representation – • Different symbols used in the related trades	12
5.	Reading of Network system Diagram& Hardware component	20
	Total	**40**

2nd Year Engg. Drawing not required.

Group 24 - Engineering Drawing

CTS Trades Covered: Mechanic Agricultural Machinery, Mechanic Motor Vehicle, Mechanic Electric Vehicle

1st -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the related trades.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing of related trades.	8
	Total	**40**

2nd -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Reading of Electrical, Electronic & Mechanical Sign and Symbols used in Automobile.	4
2.	Sketches of Electrical, Electronic & Mechanical components used in Automobile.	6
3.	Reading of Electrical wiring diagram and Layout diagram used in Automobile.	10
4.	Drawing of Electrical circuit diagram used in Automobile.	10
5.	Drawing of Block diagram of Instruments & equipment of trades	10
Total		**40**

Group 25 - Engineering Drawing

CTS Trades Covered: Refrigeration and Air conditioning & Central Air condition Plant Mechanic

1st -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the related trades.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing related to trades.	8
	Total	**40**

2nd -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Reading of Electrical, Electronic & Mechanical Sign and Symbols used in RAC	4
2.	Sketches of Electrical, Electronic & Mechanical components used in RAC	6
3.	Reading of Electrical wiring diagram and Layout diagram	10
4.	Drawing of Electrical circuit diagram used in RAC	10
5.	Drawing of Block diagram of Instruments & equipment of trades	10
Total		**40**

Group 26 - Engineering Drawing

CTS Trades Covered: Painter (General)

	1st -Year	
Sl. No.	**Topic**	**Time in hrs.**
1.	**Total**	**40**
2.	Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	8
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke, double stroke, inclined	12
4.	Dimensioning • Types of arrowhead	10
5.	Symbolic representation – • Different symbols used in the Painter (General) trades.	8
	Total	**40**

2nd Year Engg. Drawing not required.

Group 27 - Engineering Drawing

CTS Trades Covered: Marine Fitter

1st -Year

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Rhombus, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the Marine Fitter trade.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference	14
7.	Reading of Job drawing related to Marine Fitter trade.	8
	Total	**40**

2nd -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Reading of drawing of nuts, bolt, screw thread, different types of locking devices e.g., Double nut, Castle nut, Pin, etc.	10
2.	Reading of Rivets and rivetted joints, welded joints	10
3.	Reading of drawing of pipes and pipe joints	10
4.	Reading of Job Drawing & Assembly view	10
	Total	**40**

Group 28 - Engineering Drawing

CTS Trades Covered: Refractory Technician

1st -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	4
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	2
5.	Symbolic representation – • Different symbols used in the Refractory Technician trade.	4
6.	Concept and reading of Drawing in • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference)	14
7.	Reading of Job drawing related to Refractory Technician.	8
	Total	**40**

2nd Year Engg. Drawing not required.

Group 29 - Engineering Drawing

CTS Trades Covered: Vessel Navigator

1st -Year		
Sl. No.	**Topic**	**Time in hrs.**
1.	Introduction to Engineering Drawing and Drawing Instruments – • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument	2
2.	Lines- Types and applications in drawing Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools.	6
3.	Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke.	6
4.	Dimensioning • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned)	6
5.	Symbolic representation – • Different symbols used in the Vessel Navigator trade.	6
7.	Reading of Navigational Chart drawing	14
	Total	**40**

2nd Year Engg. Drawing not required.

CTS 1 Year Engineering Trade				
Sl. No.	**Trade**	**Duration**	**Sector**	Group
1	Mechanic Auto Body Repair	1 Year	Automotive	1
2	Mechanic Auto Electrical and Electronics	1 Year	Automotive	1
3	Mechanic Diesel	1 Year	Automotive	1
4	Mechanic Tractor	1 Year	Automotive	1
5	Mechanic Two and Three-wheeler	1 Year	Automotive	1
6	Pump Operator cum Mechanic	1 Year	Automotive	2
7	Foundryman	1 Year	Capital Goods & Manufacturing	3
8	Marine Engine Fitter	1 Year	Capital Goods & Manufacturing	4
9	Mechanic Lens/ Prism Grinding	1 Year	Capital Goods & Manufacturing	5
10	Sheet Metal Worker	1 Year	Capital Goods & Manufacturing	6
11	Welder	1 Year	Capital Goods & Manufacturing	7
12	Welder (Fabrication & Fitting)	1 Year	Capital Goods & Manufacturing	7
13	Welder (GMAW & GTAW)	1 Year	Capital Goods & Manufacturing	7
14	Welder (Pipe)	1 Year	Capital Goods & Manufacturing	7
15	Welder (Structural)	1 Year	Capital Goods & Manufacturing	7
16	Welder (Welding & Inspection)	1 Year	Capital Goods & Manufacturing	7
17	Artisan Using Advanced Tool	1 year	Capital Goods & Manufacturing	8
18	Industrial Robotics & Digital Manufacturing Technician	1 year	Capital Goods & Manufacturing	8
19	Manufacturing Process Control And Automation	1 year	Capital Goods & Manufacturing	8
20	Plastic Processing Operator	1 Year	Chemicals & Petrochemicals	9
21	Carpenter	1 Year	Construction	10
22	Domestic Painter	1 Year	Construction	11

23	Industrial Painter	1 Year	Construction	11
24	Mechanic Auto Body Painting	1 Year	Automotive	11
25	Mason (Building Constructor)	1 Year	Construction	12
26	Solar Technician (Electrical)	1 Year	Environmental Science	13
27	Warehouse Technician	1 Year	Logistics	14
28	In Plant Logistics Assistant	1 Year	Logistics	14
29	Stone Mining Machine Operator	1 Year	Mining	15
30	Stone Processing Machine Operator	1 Year	Mining	15
31	Plumber	1 Year	Plumbing	16
32	Rubber Technician	1 Year	Rubber Industry	17

CTS 2 Year Engineering Trade				
Sl. No.	**Trade**	**Duration**	**Sector**	**Group**
1	Mechanic Agricultural Machinery	2 Years	Automotive	18
2	Mechanic Motor Vehicle	2 Years	Automotive	18
3	Mechanic Electric Vehicle	2 year	Automotive	18
4	Aeronautical Structure and Equipment Fitter	2 Years	Capital Goods & Manufacturing	19
5	Central Air condition Plant Mechanic	2 Years	Capital Goods & Manufacturing	20
6		2 Years	Capital Goods & Manufacturing	19
7	Machinist	2 Years	Capital Goods & Manufacturing	19
8	Machinist Grinder	2 Years	Capital Goods & Manufacturing	19
9	Marine fitter	2 Years	Capital Goods & Manufacturing	21
10	Mechanic Machine Tool Maintenance	2 Years	Capital Goods & Manufacturing	19
11	Mechanic Mining Machinery	2 Years	Capital Goods & Manufacturing	19
12	Operator Advanced Machine Tool	2 Years	Capital Goods & Manufacturing	19
13	Refractory Technician	2 Years	Capital Goods & Manufacturing	22
14	Refrigeration & Air Conditioning Technician	2 Years	Capital Goods & Manufacturing	20
15	Technician Mechatronics	2 Years	Capital Goods & Manufacturing	19
16	Textile Mechatronics	2 Years	Capital Goods & Manufacturing	19
17	Tool & Die Maker (Dies & Moulds)	2 Years	Capital Goods & Manufacturing	19
18	Tool & Die Maker (Press, Tools, Jigs & fixtures)	2 Years	Capital Goods & Manufacturing	19
19	Turner	2 Years	Capital Goods & Manufacturing	19

20	Vessel Navigator	2 Years	Capital Goods & Manufacturing	23
21	Basic Designer and Virtual Verifier (Mechanical)	2 year	Capital Goods & Manufacturing	19
22	Advanced CNC Machining	2 year	Capital Goods & Manufacturing	19
23	Attendant Operator (Chemical Plant)	2 Years	Chemicals & Petrochemicals	24
24	Electroplater	2 Years	Chemicals & Petrochemicals	28
25	Instrument Mechanic (Chemical Plant)	2 Years	Chemicals & Petrochemicals	24
26	Laboratory Assistant (Chemical Plant)	2 Years	Chemicals & Petrochemicals	24
27	Maintenance Mechanic (Chemical Plant)	2 Years	Chemicals & Petrochemicals	24
28	Painter (General)	2 Years	Construction	25
29	Electronics Mechanic	2 Years	Electronics & Hardware	26
30	Instrument Mechanic	2 Years	Electronics & Hardware	26
31	Mechanic Consumer Electronic Appliances	2 Years	Electronics & Hardware	26
32	Technician Medical Electronics	2 Years	Electronics & Hardware	26
33	Technician Power Electronics System	2 Years	Electronics & Hardware	26
34	Technician Electronics System Design & Repair	2 Years	Electronics & Hardware	26
35	Information and Communication Technology System Maintenance	2 Years	IT & ITeS	27
36	Information Technology	2 Years	IT & ITeS	27
37	Electrician	2 Years	Power	28
38	Electrician - Power Distribution	2 Years	Power	28
39	Lift and Escalator Mechanic	2 Years	Power	28
40	Wireman	2 Years	Power	28
41	Spinning Technician	2 Years	Textile & Handloom	29
42	Textile Wet Processing Technician	2 Years	Textile & Handloom	29
43	Weaving Technician	2 Years	Textile & Handloom	29

List of Draughtsman group Trades				
Sl. No.	**Trade**	**Duration**	**Sector**	**Group**
1	Additive Manufacturing Technician (3D Printing)	1 Year	Capital Goods & Manufacturing	**D'man**
2	D'man Mechanical	2 Years	Capital Goods & Manufacturing	**D'man**
3	Architectural Draughtsman	2 Years	Construction	**D'man**
4	Civil Engineer Assistant	2 Years	Construction	**D'man**
5	D'man Civil	2 Years	Construction	**D'man**
6	Interior Design & Decoration	1 Year	Construction	**D'man**
7	Surveyor	2 Years	Construction	**D'man**
List of Visually Impaired (Divyang) group of Trade				
1	Metal Cutting Attendant (for Visually Impaired)	2 Years	Capital Goods & Manufacturing	Engg. (VI)

Revised syllabus of

Workshop Calculation & Science (WCS)

for 81 Engineering Trades

Please note that this syllabus is effective from 2021-22 session.

This syllabus is merged with Trade theory syllabus and will be assessed as a part of Trade Theory CBT.

List of Revised Syllabus of Workshop Calculation & Science (Engineering Trades)

Sl. No.	Name of Trade (NSQF Level)	Duration in Year	Revised Hours 1st Year (Earlier 80 hrs.)	Revised Hours 2nd Year (Earlier 80 hrs.)
1.	Additive Manufacturing Technician (3D Printing) (NSQF Level - 4)	1	38	-
2.	Advanced CNC Machining Tech.(NSQF Level - 5)	2	38	34
3.	Aeronautical Structure and Equipment Fitter (NSQF Level - 5)	2	40	22
4.	Architectural Draughtsman (NSQF Level - 5)	2	40	36
5.	Attendant Operator (Chemical Plant) (NSQF Level - 5)	2	38	18
6.	Basic Designer and Virtual Verifier (Mechanical) (NSQF Level - 5)	2	22	24
7.	Carpenter (NSQF Level - 4)	1	26	-
8.	Central Air Condition Plant Mechanic (NSQF Level - 5)	2	40	34
9.	Civil Engineering Assistant (NSQF Level - 5)	2	40	38
10.	Draughtsman (Civil) (NSQF Level - 5)	2	40	40
11.	Draughtsman Mechanical (NSQF Level - 5)	2	34	24
12.	Domestic Painter (NSQF Level - 4)	1	18	-
13.	Electrician (NSQF Level - 5)	2	30	32
14.	Electrician-Power Distribution (NSQF Level - 5)	2	40	34
15.	Electronics Mechanic (NSQF Level - 5)	2	35	16
16.	Electroplater (NSQF Level - 5)	2	40	22
17.	Fitter (NSQF Level - 5)	2	38	28
18.	Foundryman (NSQF Level - 4)	1	36	-
19.	Information and Communication Technology System Maintenance (NSQF Level - 5)	2	30	24
20.	Instrument Mechanic (Chemical Plant) (NSQF Level - 5)	2	38	18

Sl. No.	Name of Trade (NSQF Level)	Duration in Year	Revised Hours 1st Year (Earlier 80 hrs.)	Revised Hours 2nd Year (Earlier 80 hrs.)
21.	Industrial Painter (NSQF Level - 4)	1	30	-
22.	Industrial Robotics & Digital Manufacturing Tech. (NSQF Level - 4)	1	40	-
23.	Information Technology (NSQF Level - 5)	2	24	24
24.	Instrument Mechanic (NSQF Level - 5)	2	38	18
25.	In-Plant Logistics Assistant (NSQF Level - 4)	1	34	-
26.	Interior Design and Decoration (NSQF Level - 4)	1	32	-
27.	Laboratory Assistant (Chemical Plant) (NSQF Level - 5)	2	28	18
28.	Lift and Escalator Mechanic (NSQF Level - 5)	2	38	32
29.	Mechanic Agricultural Machinery (NSQF Level - 5)	2	36	16
30.	Machinist Grinder (NSQF Level - 5)	2	36	38
31.	Machinist (NSQF Level - 5)	2	36	38
32.	Maintenance Mechanic (Chemical Plant) (NSQF Level - 5)	2	30	12
33.	Manufacturing Process Control and Automation (NSQF Level - 4)	1	36	-
34.	Marine Engine Fitter (NSQF Level - 4)	1	30	-
35.	Marine Fitter (NSQF Level - 5)	2	38	22
36.	Mason (Building Constructor) (NSQF Level - 3)	1	36	-
37.	Mechanic Auto Body Paint Repair (NSQF Level - 4)	1	40	-
38.	Mechanic Auto Body Repair (NSQF Level - 4)	1	40	-
39.	Mechanic Auto Electrical and Electronics (NSQF Level - 4)	1	40	-
40.	Mechanic Consumer Electronic Appliances (NSQF Level - 5)	2	35	16
41.	Mechanic Electric Vehicle (NSQF Level - 4)	2	40	26

Sl. No.	Name of Trade (NSQF Level)	Duration in Year	Revised Hours 1st Year (Earlier 80 hrs.)	Revised Hours 2nd Year (Earlier 80 hrs.)
42.	Mechanic Diesel (NSQF Level - 4)	1	40	-
43.	Mechanic Lens/ Prism Grinding (NSQF Level - 4)	1	32	-
44.	Mechanic Motor Vehicle (NSQF Level - 5)	2	40	34
45.	Mechanic Machine Tool Maintenance (NSQF Level - 5)	2	36	36
46.	Mechanic Mining Machinery (NSQF Level - 5)	2	34	30
47.	Mechanic Tractor (NSQF Level - 4)	1	40	-
48.	Mechanic Two and Three-Wheeler (NSQF Level - 4)	1	28	-
49.	Operator Advanced Machine Tool (NSQF Level - 5)	2	36	36
50.	Painter (General) (NSQF Level - 5)	2	18	30
51.	Plastic Processing Operator (NSQF Level - 4)	1	30	-
52.	Plumber (NSQF Level - 4)	1	32	-
53.	Pump Operator cum Mechanic (NSQF Level - 4)	1	38	-
54.	Refractory Technician (NSQF Level - 5)	2	38	28
55.	Refrigeration and Air Conditioning Technician (NSQF Level - 5)	2	38	40
56.	Rubber Technician (NSQF Level - 4)	1	38	-
57.	Sheet Metal Worker (NSQF Level - 3)	1	38	-
58.	Solar Technician (Electrical) (NSQF Level - 4)	1	36	-
59.	Spinning Technician (NSQF Level - 5)	2	20	26
60.	Stone Processing Machine Operator (NSQF Level - 4)	1	34	-
61.	Stone Mining Machine Operator (NSQF Level - 4)	1	32	-
62.	Surveyor (NSQF Level - 5)	2	40	40

Sl. No.	Name of Trade (NSQF Level)	Duration in Year	Revised Hours 1st Year (Earlier 80 hrs.)	Revised Hours 2nd Year (Earlier 80 hrs.)
63.	Tool & Die Maker (Dies & Moulds) (NSQF Level - 5)	2	40	34
64.	Tool & Die Maker (Press Tools, Jigs & Fixtures) (NSQF Level - 5)	2	40	34
65.	Tech. Electronics System Design & Repair (NSQF Level-5)	2	28	16
66.	Technician Medical Electronics (NSQF Level - 5)	2	36	20
67.	Technician Mechatronics (NSQF Level - 5)	2	36	16
68.	Technician Power Electronics Systems (NSQF Level - 5)	2	34	16
69.	Textile Mechatronics (NSQF Level - 5)	2	36	16
70.	Textile Wet Processing Technician (NSQF Level - 5)	2	30	18
71.	Turner (NSQF Level - 5)	2	40	34
72.	Vessel Navigator (NSQF Level - 5)	2	30	18
73.	Warehouse Technician (NSQF Level - 4)	1	40	-
74.	Welder (NSQF Level - 4)	1	38	-
75.	Welder (GMAW & GTAW) (NSQF Level - 3)	1	38	-
76.	Welder (Pipe) (NSQF Level - 3)	1	38	-
77.	Welder (Structural) (NSQF Level - 3)	1	38	-
78.	Welder (Fabrication & Fitting) (NSQF Level - 3)	1	38	-
79.	Welder (Welding & Inspection) (NSQF Level - 3)	1	38	-
80.	Weaving Technician (NSQF Level - 5)	2	24	28
81.	Wireman (NSQF Level - 4)	2	30	28

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ADDITIVE MANUFACTURING TECHNICIAN (3D PRINTING)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		Types of plastics and its properties (warpage& shrinkage)
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20			
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**10**	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**4**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ADVANCED CNC MACHINING TECHNICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties ~~and uses of rubber, timber and~~ insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		Definition only
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		

2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and~~ transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Partially retained		
4	Co-efficient of linear expansion ~~and related problems with assignments~~	80-81	1.6.29	Partially retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**					
1	Measurement of angles	154-155	1.10.46	Retained	**4**	
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ADVANCED CNC MACHINING TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	Already covered in 1st year
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		

2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**8**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only overview required
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	58--66	2.6.13	Retained		Only overview required
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : AERONAUTICAL STRUCTURE AND EQUIPMENT FITTER (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**4**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced~~, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		

VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**4**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : AERONAUTICAL STRUCTURE AND EQUIPMENT FITTER (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**4**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**0**	

1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		Already covered in 1 st year
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**2**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		Only intro as covered in theory
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		Only intro as covered in theory
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**22**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ARCHITECTURAL DRAUGHTSMAN (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and ~~uses of rubber,~~ timber ~~and insulating materials~~	50-52	1.3.19	Partially retained		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		

2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	

1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	

1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**6**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Retained		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ARCHITECTURAL DRAUGHTSMAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Deleted		
2	Friction - Lubrication	8--11	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**6**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**6**	

1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**4**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ATTENDANT OPERATOR (CHEMICAL PLANT) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**8**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		

2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**4**	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		Only basics to be taught
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		Only basics to be taught
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		Only basics to be taught
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		Only basics to be taught
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		Only basics to be taught
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		Only basics to be taught
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	

1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ATTENDANT OPERATOR (CHEMICAL PLANT) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Should be taught in 1st Year with basics
2	Friction - Lubrication	8--11	2.1.02	Retained		Should be taught in 1st Year with basics
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		Should be taught in 1st Year with basics
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**6**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		

2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL REVISED HOURS		**18**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : BASIC DESIGNER AND VIRTUAL VERIFIER (MECHANICAL) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks /Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**0**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		

4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**0**	
1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		

3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**10**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**					
1	Measurement of angles	154-155	1.10.46	Retained		

2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**22**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : BASIC DESIGNER AND VIRTUAL VERIFIER (MECHANICAL) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	

1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**24**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : CARPENTER

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks /Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber ~~and insulating materials~~	50-52	1.3.19	Partially deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**~~Speed and Velocity, Work, Power and Energy~~**			Deleted	**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**0**	

1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Deleted		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		

46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**26**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : CENTRAL AC PLANT MECHANIC (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only Direct problem solving
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties ~~and uses of rubber, timber and~~ insulating materials	50-52	1.3.19	Partially retained		Covered in theory
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity, **numerical related to L,C,O section only**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**12**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**4**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		

VIII	**Mensuration**				**4**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Deleted		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Deleted		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : CENTRAL AC PLANT MECHANIC (2nd Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**4**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**6**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		

2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**8**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**6**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	58--66	2.6.13	Retained		Only definitions
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92-95	2.8.17	Retained		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : CIVIL ENGINEERING ASSISTANT (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and ~~uses of rubber,~~ timber ~~and insulating materials~~	50-52	1.3.19	Partially retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		

VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**4**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Retained		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : CIVIL ENGINEERING ASSISTANT (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Deleted		
2	Friction - Lubrication	8--11	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**6**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**10**	

1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**6**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**4**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		

2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS	**38**		

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : DOMESTIC PAINTER

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**0**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**0**	
1	~~Mass, volume, density, weight and specific gravity.~~	53-54	1.4.20	Deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	~~**Speed and Velocity, Work, Power and Energy**~~			Deleted	**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**0**	
1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Deleted		

2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**18**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : DRAUGHTSMAN (CIVIL) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and ~~uses of rubber,~~ timber ~~and insulating materials~~	50-52	1.3.19	Partially retained		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**6**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Retained		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : DRAUGHTSMAN (CIVIL) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**6**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**10**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**6**	

1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**4**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : DRAUGHTSMAN (MECHANICAL) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20			
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		

46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**10**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**					
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : DRAUGHTSMAN (MECHANICAL) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		

2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**24**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ELECTRICIAN-POWER DISTRIBUTION (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**2**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		Covered in theory syllabus
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		Covered in theory syllabus
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		Covered in theory syllabus
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight ~~and specific gravity~~	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**4**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		

4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**5**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		

6	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**					
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained	**3**	
X	**Trigonometry**					
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ELECTRICIAN-POWER DISTRIBUTION (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**6**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		

3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**10**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**2**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ELECTRICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**2**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		Covered in theory syllabus
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		Covered in theory syllabus
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		Covered in theory syllabus
IV	**Mass, Weight, Volume and Density**				**3**	
1	Mass, volume, density, weight ~~and specific gravity~~	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**5**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		Already covered in theory
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		Already covered in theory
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		Already covered in theory
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		Already covered in theory
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		Already covered in theory

46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		Already covered in theory
VIII	**Mensuration**				**7**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**					
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained	**3**	
X	**Trigonometry**					
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		

3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ELECTRICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**6**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**10**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		

2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**2**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**32**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ELECTRONICS MECHANIC (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**2**	
1	~~Mass, volume, density, weight and~~ specific gravity	53-54	1.4.20	Partially deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		

4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**12**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**3**	

1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**35**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ELECTRONICS MECHANIC (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**8**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		

2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**16**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ELECTROPLATOR (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**8**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight ~~and specific gravity~~	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		

46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted	**2**	
X	**Trigonometry**					
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ELECTROPLATOR (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Retained		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Deleted		

IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**22**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : FITTER (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**0**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		Covered in theory
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		Covered in theory
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		Covered in theory
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		Covered in theory
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		Covered in theory
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		

2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced~~, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		

3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**6**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : FITTER (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	

1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		Already covered in 1 st year
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**2**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only intro as covered in theory
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	58--66	2.6.13	Retained		Only intro as covered in theory
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**28**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : FOUNDRYMAN

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**8**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		

2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**12**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**2**	

1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced~~, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		

IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Retained		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : IN PLANT LOGISTICS ASSISTANT

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**2**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight ~~and specific gravity~~	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**0**	
1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Retained		

2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**12**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced~~, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		

3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Retained		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INDUSTRIAL PAINTER

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**8**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**0**	
1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Deleted		

2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**4**	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
X	**Trigonometry**				**4**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADES : INDUSTRIAL ROBOTICS & DIGITAL MANUFACTURING TECHNICIAN

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, ~~timber~~ and insulating materials	50-52	1.3.19	Retained Partially		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity, **numericals realted to sections L,C O.**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	~~**Speed and Velocity, Work, Power and Energy**~~			Deleted	**4**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	Heat &Temperature - ~~Temperature measuring instruments, types of thermometer, pyrometer and~~ transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained Partially		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure,~~ gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		

3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INFORMATION & COMMUNICATION TECHNOLOGY SYSTEM MAINTENANCE (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**0**	
1	~~Mass, volume, density, weight and~~ specific gravity	53-54	1.4.20	Deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**0**	

1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**12**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		

VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**4**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INFORMATION & COMMUNICATION TECHNOLOGY SYSTEM MAINTENANCE (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		

IV	**Algebra**				**8**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**6**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**24**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INFORMATION & COMMUNICATION TECHNOLOGY SYSTEM MAINTENANCE (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**0**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**0**	
1	~~Mass, volume, density, weight and specific gravity~~	53-54	1.4.20	Deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**0**	

1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Deleted		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**10**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
6	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		

VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**4**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**24**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INFORMATION & COMMUNICATION TECHNOLOGY SYSTEM MAINTENANCE (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		

3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**8**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**6**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
		TOTAL REVISED HOURS			**24**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INSTRUMENT MECHANIC (CHEMICAL PLANT) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**8**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		

2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**4**	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		Only basics to be taught
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		Only basics to be taught
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		Only basics to be taught
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		Only basics to be taught
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		Only basics to be taught
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		Only basics to be taught
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		

IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INSTRUMENT MECHANIC (CHEMICAL PLANT) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		

IV	**Algebra**				**6**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL REVISED HOURS		**18**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INSTRUMENT MECHANIC (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**8**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**4**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		Only basics to be taught
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		Only basics to be taught
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		Only basics to be taught
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		Only basics to be taught
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		Only basics to be taught

46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		Only basics to be taught
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INSTRUMENT MECHANIC (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Should be taught in 1st Year with basics
2	Friction - Lubrication	8--11	2.1.02	Retained		Should be taught in 1st Year with basics
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		Should be taught in 1st Year with basics
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		

3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**6**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL REVISED HOURS		**18**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INTERIOR DESIGN & DECORATION

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**0**	
1	~~Mass, volume, density, weight and specific gravity.~~	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**0**	
1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Deleted		

2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
6	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		

3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, ~~cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Partially deleted		
5	Finding the lateral surface area, total surface area ~~and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Partially deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Deleted		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Deleted		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**32**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : LABORATORY ASSISTANT (CHEMICAL PLANT) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		

2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		

2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**28**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : LABORATORY ASSISTANT (CHEMICAL PLANT) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**6**	

1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL REVISED HOURS		**18**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : Lift & Escalator Mechanic (1st Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**2**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight ~~and specific gravity~~	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**4**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**0**	

1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Deleted		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**10**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		

46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Deleted		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Deleted		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : ELECTRICIAN (2nd Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**6**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**10**	

1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**2**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**32**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MACHINIST GRINDER (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**4**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	~~Ratio and proportion - Direct and indirect proportions~~	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel ~~and carbon steel~~	48-49	1.3.18	Partially retained		

5	Properties and uses of ~~rubber, timber and~~ insulating materials	50-52	1.3.19	Partially retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity **Numerical related to L,C, O sections**	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	-	
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		

3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49			
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MACHINIST GRINDER (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		Repeated
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		Repeated
V	**Elasticity**				**8**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only Introduction
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		Not relevant
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		Not relevant
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MACHINIST (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**4**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	~~Ratio and proportion - Direct and indirect proportions~~	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel ~~and carbon steel~~	48-49	1.3.18	Partially retained		

5	Properties and uses of ~~rubber, timber and~~ insulating materials	50-52	1.3.19	Partially retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity **Numerical related to L,C, O sections**	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	**-**	
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		

3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49			
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MACHINIST (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		Repeated
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		Repeated
V	**Elasticity**				**8**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only Introduction
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		Not relevant
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		Not relevant
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MAINTENANCE MECHANIC (CHEMICAL PLANT) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Retained		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Retained		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**4**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		Only basics to be taught
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		Only basics to be taught
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		Only basics to be taught
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		Only basics to be taught

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		Only basics to be taught
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		Only basics to be taught
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : INSTRUMENT MECHANIC (CHEMICAL PLANT) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Retained		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	

1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL REVISED HOURS		**12**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MANUFACTURING PROCESS CONTROL AND AUTOMATION

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		Number systems
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**2**	
1	~~Mass, volume, density, weight and~~ specific gravity	53-54	1.4.20	Partially deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**6**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**8**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADES : MARINE ENGINE FITTER

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained Partially		

5	Properties and uses of rubber, ~~timber~~ and insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity, **numericals realted to sections L,C O.**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**~~Speed and Velocity, Work, Power and Energy~~**			Deleted	**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	Heat &Temperature - ~~Temperature measuring instruments, types of thermometer, pyrometer and~~ transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained Partially		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure,~~ gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		

3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Retained		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Retained		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Retained		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MARINE FITTER (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		

5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**8**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced~~, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		

5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Retained		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Retained		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Retained		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**6**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MARINE FITTER (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Basics only
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Retained		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Retained		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		Already covered in 1 st year
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**2**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	58--66	2.6.13	Retained		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**22**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MASON (BUILDING CONSTRUCTOR)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**8**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		

5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44			
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45			
X	**Trigonometry**				**6**	
1	Measurement of angles	154-155	1.10.46			
2	Trigonometrical ratios	156-161	1.10.47			
3	~~Trigonometrical tables~~	162-172	1.10.48			
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49			
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC AUTO BODY PAINT REPAIR

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**8**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**10**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals ~~and non-metals~~	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained Partially		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure,~~ gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		Some topics also covered in theory syllabus.
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		

5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**0**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC AUTO BODY PAINT REPAIR

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**8**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**4**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy~~ and related problems with assignment~~	72-73	1.5.25	Partially retained		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals ~~and non-metals~~	74-75	1.6.26	Partially retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure,~~ gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		Some topics also covered in theory syllabus.
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		

4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
6	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC AGRICULTURAL MACHINERY (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity, **numerical related to L,C,O section only**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**4**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		Only basics
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		

5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**4**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC AGRICULTURAL MACHINERY (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books ' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**4**	
1	Friction - Advantages and disadvantages, ~~Laws of friction, co-efficient of friction, angle of friction,~~ simple problems related to friction	1--7	2.1.01	Retained		Only theory
2	Friction - Lubrication	8--11	2.1.02	Retained		Only theory
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03			
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**0**	

1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**12**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**16**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC AUTO ELECTRICAL & ELECTRONICS

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		

5	Properties and uses of rubber~~, timber~~ and insulating materials	50-52	1.3.19	Partially deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**4**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		Simple problems
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**0**	
1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Deleted		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**10**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**4**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC CONSUMER ELECTRONIC APPLIANCES (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**2**	
1	~~Mass, volume, density, weight and~~ specific gravity	53-54	1.4.20	Partially deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**12**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**3**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**35**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC CONSUMER ELECTRONIC APPLIANCES (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**8**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	

1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**16**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC DIESEL

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity, **numerical related to L,C,O section only**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**4**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		Only basics
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		

5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC ELECTRIC VEHICLE (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**2**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight ~~and specific gravity~~	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**12**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced~~, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC ELECTRIC VEHICLE (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**4**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Deleted		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**6**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**2**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Retained		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**26**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC LENS/ PRISM GRINDING

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Retained		About Glass and Plastic materials
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Retained		

5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Retained		Properties of Glass and Plastic materials
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Retained		Only Basics
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Retained		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**32**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC MACHINE TOOL MAINTENANCE (1st Year)

TOOL

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**4**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	~~Ratio and proportion - Direct and indirect proportions~~	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		

4	Difference between iron & steel, alloy steel ~~and carbon steel~~	48-49	1.3.18	Partially retained		
5	Properties and uses of ~~rubber, timber and~~ insulating materials	50-52	1.3.19	Partially retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity **Numerical related to L,C, O sections**	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	-	
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Partially retained		

2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49			
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC MACHINE TOOL MAINTENANCE TOOL (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**4**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**4**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**8**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**8**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only Introduction
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		Not relevant
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		Not relevant
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC MINING MACHINERY (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		Only basic problems
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		Only basic
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
6	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**2**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		Only Basics
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Deleted		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Deleted		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC MINING MACHINERY (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Only theory
2	Friction - Lubrication	8--11	2.1.02	Retained		Only theory
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03			Only theory
II	**Centre of Gravity**				**2**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		Only theory
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Retained		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Retained		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**8**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**12**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC MOTOR VEHICLE (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		Only basic problems
V	**Speed and Velocity, Work, Power and Energy**				**8**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		Only basic
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
6	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**2**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		Only Basics
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Deleted		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Deleted		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC MOTOR VEHICLE (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Only theory
2	Friction - Lubrication	8--11	2.1.02	Retained		Only theory
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03			Only theory
II	**Centre of Gravity**				**2**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		Only theory
III	**Area of cut out regular surfaces and area of irregular surfaces**				**6**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**8**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC TRACTOR

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity, **numerical related to L,C,O section only**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**4**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		Only basics
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	**Basic Electricity**				**2**	

1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		

2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : OPERATOR ADVANCED MACHINE TOOL (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**4**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	~~Ratio and proportion - Direct and indirect proportions~~	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel ~~and carbon steel~~	48-49	1.3.18	Partially retained		

5	Properties and uses of ~~rubber, timber and~~ insulating materials	50-52	1.3.19	Partially retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity **Numerical related to L,C, O sections**	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	**-**	
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Partially retained		

2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49			
		TOTAL REVISED HOURS			**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : OPERATOR ADVANCED MACHINE TOOL (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		Repeated
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		Repeated
V	**Elasticity**				**8**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only Introduction
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		Not relevant
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		Not relevant
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : PAINTER (GENERAL) (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**0**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**0**	
1	~~Mass, volume, density, weight and specific gravity.~~	53-54	1.4.20	Deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**~~Speed and Velocity, Work, Power and Energy~~**			Deleted	**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**0**	
1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Deleted		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Deleted		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		

4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
		TOTAL REVISED HOURS			**18**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : PAINTER (GENERAL) (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**10**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**6**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	

1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : PLUMBER

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		

5	Properties and uses of ~~rubber, timber and~~ insulating materials	50-52	1.3.19	Partially deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**~~Speed and Velocity, Work, Power and Energy~~**			Deleted	**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		

2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
		TOTAL REVISED HOURS			**32**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADES : PLASTIC PROCESSING OPERATOR

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**2**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Retained		Properties and uses Polymer, thermoplastic and thermoset material
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Retained		

4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Retained Partially		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**~~Speed and Velocity, Work, Power and Energy~~**			Deleted	**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure,~~ gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		

2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**4**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		

2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : PLUMBER

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		

5	Properties and uses of ~~rubber, timber and~~ insulating materials	50-52	1.3.19	Partially deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**~~Speed and Velocity, Work, Power and Energy~~**			Deleted	**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		

2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**32**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : PUMP OPERATOR CUM MECHANIC

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		

5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity, **numerical related to L,C,O section only**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**4**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		Only basics
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Retained		Only Basics
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Retained		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : REFRACTORY TECHNICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**8**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**12**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced~~, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		

5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Retained		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : REFRACTORY TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Retained		
2	~~Friction - Lubrication~~	8--11	2.1.02	Retained		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		Already covered in 1 st year
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**2**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**8**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	58--66	2.6.13	Retained		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**28**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : REFRIGERATION & AIR CONDITIONING (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only Direct problem solving
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		

5	Properties ~~and uses of rubber, timber and~~ insulating materials	50-52	1.3.19	Partially retained		Covered in theory
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity, **numerical related to L,C,O section only**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**12**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		

2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**4**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Deleted		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Deleted		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : REFRIGERATION & AIR CONDITIONING (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**8**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**8**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	58--66	2.6.13	Retained		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92-95	2.8.17	Retained		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : MECHANIC DIESEL

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		More about Rubber materials
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		

5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		Only basics
VI	**Heat & Temperature and Pressure**				**8**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		

5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Deleted		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Deleted		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADES : SHEET METAL WORKER

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained Partially		

5	Properties and uses of rubber, ~~timber~~ and insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity, **numericals realted to sections L,C O.**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**~~Speed and Velocity, Work, Power and Energy~~**			Deleted	**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	Heat &Temperature - ~~Temperature measuring instruments, types of thermometer, pyrometer and~~ transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained Partially		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure,~~ gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		

3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : SOLAR TECHNICIAN (ELECTRICAL)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**2**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**0**	
1	~~Mass, volume, density, weight and specific gravity~~	53-54	1.4.20	Deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**8**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
6	Electrical power, ~~HP,~~ energy and units of electrical energy	118-120	1.7.38	Partially deleted		
VIII	**Mensuration**				**4**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**6**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : SPINNING TECHNICIAN (1st Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		Properties of yarn

IV	**Mass, Weight, Volume and Density**				**0**	
1	~~Mass, volume, density, weight and specific gravity~~	53-54	1.4.20	Deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**2**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		

4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**20**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : SPINNING TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**2**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**4**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**6**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**26**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : STONE MINING MACHINE OPERATOR

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**4**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	~~Ratio and proportion - Direct and indirect proportions~~	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel ~~and carbon steel~~	48-49	1.3.18	Partially retained		

5	Properties and uses of ~~rubber, timber and~~ insulating materials	50-52	1.3.19	Partially retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**2**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	-	
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Retained		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49			
			TOTAL REVISED HOURS		**32**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : STONE PROCESSING MACHINE OPERATOR

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**4**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	~~Ratio and proportion - Direct and indirect proportions~~	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel ~~and carbon steel~~	48-49	1.3.18	Partially retained		

5	Properties and uses of ~~rubber, timber and~~ insulating materials	50-52	1.3.19	Partially retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**2**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	**-**	
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Partially retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49			
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : SURVEYOR (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22			
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23			
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24			
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25			
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion ~~and related problems with assignments~~	80-81	1.6.29	Partially retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**0**	
1	~~Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units~~	98	1.7.33			
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34			

3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35			
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36			
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37			
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38			
VIII	**Mensuration**				**10**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39			
2	Area and perimeter of Triangles	125-129	1.8.40			
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41			
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42			
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43			
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44			
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45			
X	**Trigonometry**				**6**	
1	Measurement of angles	154-155	1.10.46			
2	Trigonometrical ratios	156-161	1.10.47			
3	Trigonometrical tables	162-172	1.10.48			
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49			
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : SURVEYOR (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04			
III	**Area of cut out regular surfaces and area of irregular surfaces**				**14**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**12**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	

1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TECHNICIAN ELECTRONICS SYSTEM DESIGN AND REPAIR (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**0**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**0**	
1	~~Mass, volume, density, weight and specific gravity~~	53-54	1.4.20	Partially deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**12**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**3**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**29**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TECHNICIAN ELECTRONICS SYSTEM DESIGN AND REPAIR (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**8**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	

1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**16**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TECHNICIAN MECHATRONICS (1st Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		Number systems
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**2**	

1	~~Mass, volume, density, weight and~~ specific gravity	53-54	1.4.20	Partially deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**6**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**8**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		

2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		

4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TECHNICIAN MECHATRONICS (1st Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		Number systems
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**2**	

1	~~Mass, volume, density, weight and~~ specific gravity	53-54	1.4.20	Partially deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**6**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**8**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TECHNICIAN MEDICAL ELECTRONICS (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**2**	
1	~~Mass, volume, density, weight and~~ specific gravity	53-54	1.4.20	Partially deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**12**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**4**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TECHNICIAN MEDICAL ELECTRONICS (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**8**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	

1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**12**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**20**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TECHNICIAN POWER ELECTRONIC SYSTEMS (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**0**	
1	~~Mass, volume, density, weight and specific gravity~~	53-54	1.4.20	Deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**12**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**3**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**33**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TECHNICIAN POWER ELECTRONIC SYSTEMS (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**8**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	

1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**16**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TEXTILE MECHATRONICS (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		Number systems
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		

5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**2**	
1	~~Mass, volume, density, weight and~~ specific gravity	53-54	1.4.20	Partially deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**6**	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**8**	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**36**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TEXTILE MECHATRONICS (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**0**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	~~Friction - Lubrication~~	8--11	2.1.02	Deleted		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**8**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	

1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**8**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**16**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TEXTILE WET PROCESSING TECHNICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**4**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Retained		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Retained		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		

VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**4**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		Only basics to be taught
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Retained		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Retained		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Retained		

VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TEXTILE WET PROCESSING TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Should be taught in 1st Year with basics
2	Friction - Lubrication	8--11	2.1.02	Retained		Should be taught in 1st Year with basics
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		Should be taught in 1st Year with basics
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**6**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		

2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		
V	**Elasticity**				**0**	
1	~~Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus~~	41-52	2.5.10	Deleted		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL REVISED HOURS		**18**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TOOL & DIE MAKER (DIES & MOULDS) (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		

5	Properties ~~and uses of rubber, timber and~~ insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		Definition only
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and~~ transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Partially retained		
4	Co-efficient of linear expansion ~~and related problems with assignments~~	80-81	1.6.29	Partially retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**2**	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**					
1	Measurement of angles	154-155	1.10.46	Retained	**4**	
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TOOL & DIE MAKER (DIES & MOULDS) (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	Already covered in 1st year
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**8**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only overview required
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	58--66	2.6.13	Retained		Only overview required
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TOOL & DIE MAKER (PTJ&F) (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties ~~and uses of rubber, timber and~~ insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		Definition only
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		

VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and~~ transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Partially retained		
4	Co-efficient of linear expansion ~~and related problems with assignments~~	80-81	1.6.29	Partially retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**					
1	Measurement of angles	154-155	1.10.46	Retained	**4**	
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TOOL & DIE MAKER (PTJ&F) (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	Already covered in 1st year
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		

2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**8**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only overview required
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	58--66	2.6.13	Retained		Only overview required
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TURNER (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity, **numericals realted to sections L,C O.**	53-54	1.4.20	Retained		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		

VI	**Heat & Temperature and Pressure**				**4**	
1	~~Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals~~	74-75	1.6.26	Deleted		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		

VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained	**4**	
X	**Trigonometry**					
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : TURNER (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**8**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	29--31	2.3.07	Retained		
IV	**Algebra**				**0**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Deleted		Already covered in 1st year

2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Deleted		Already covered in 1st year
V	**Elasticity**				**8**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**2**	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only basics
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		Part of theory syllabus
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**					
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained	**6**	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**34**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : VESSEL NAVIGATOR (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**0**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		

3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced~~, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		

5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Deleted		
X	**Trigonometry**				**6**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : VESSEL NAVIGATOR (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**6**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	12--13	2.1.03	Retained		
II	**Centre of Gravity**				**4**	
1	Centre of gravity - Centre of gravity and its practical application	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		Already covered in 1 st year
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**2**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Retained		Only intro as covered in theory
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Retained		Only intro as covered in theory
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**6**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**18**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : WAREHOUSE TECHNICIAN

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**2**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity, **numerical related to L,C,O section only**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		Only basics
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	**Basic Electricity**				**12**	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**4**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**6**	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Retained		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**40**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : WEAVING TECHNICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**0**	
1	~~Types metals, types of ferrous and non ferrous metals~~	40 -41	1.3.15	Deleted		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		
3	~~Introduction of iron and cast iron~~	45-47	1.3.17	Deleted		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		

IV	**Mass, Weight, Volume and Density**				**2**	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		Only basic problems
V	**Speed and Velocity, Work, Power and Energy**				**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		Only basic
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	**Basic Electricity**				**6**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		

5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
6	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**0**	
1	~~Area and perimeter of square, rectangle and parallelogram~~	121-124	1.8.39	Deleted		
2	~~Area and perimeter of Triangles~~	125-129	1.8.40	Deleted		
3	~~Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse~~	130-137	1.8.41	Deleted		
4	~~Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder~~	138-144	1.8.42	Deleted		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**2**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		Only Basics
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Deleted		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Deleted		
3	~~Trigonometrical tables~~	162-172	1.10.48	Deleted		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**24**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : WEAVING TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**4**	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	1--7	2.1.01	Retained		Only theory
2	Friction - Lubrication	8--11	2.1.02	Retained		Only theory
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Retained		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**6**	
1	Area of cut out regular surfaces - circle, segment and sector of circle	24--26	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	27--28	2.3.06	Retained		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**0**	
1	~~Algebra - Addition , subtraction, multiplication & division~~	32--35	2.4.08	Deleted		
2	~~Algebra - Theory of indices, algebraic formula, related problems~~	36--40	2.4.09	Deleted		
V	**Elasticity**				**8**	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**0**	
1	~~Profit and loss - Simple problems on profit & loss~~	67--72	2.7.14	Deleted		
2	~~Profit and loss - Simple and compound interest~~	73--84	2.7.15	Deleted		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**28**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADES :

1. Welder (NSQF Level – 4 , 2. Welder (GMAW & GTAW) (NSQF Level - 3)

3. Welder (Pipe) (NSQF Level - 3), 4. Welder (Structural) (NSQF Level - 3)

5. Welder (Fabrication & Fitting) (NSQF Level - 3), 6. Welder (Welding & Inspection) (NSQF Level - 3)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**					
1	Square and square root	27	1.2.08	Retained	**6**	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**6**	

1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained Partially		
5	Properties and uses of rubber, ~~timber~~ and insulating materials	50-52	1.3.19	Retained		
IV	**Mass, Weight, Volume and Density**				**4**	
1	Mass, volume, density, weight and specific gravity, **numericals realted to sections L,C O.**	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	~~**Speed and Velocity, Work, Power and Energy**~~			Deleted	**0**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	~~Work, power, energy, HP, IHP, BHP and efficiency~~	69-71	1.5.24	Deleted		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Deleted		
VI	**Heat & Temperature and Pressure**				**6**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	~~Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature~~	76-77	1.6.27	Deleted		
3	Heat &Temperature - ~~Temperature measuring instruments, types of thermometer, pyrometer and~~ transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained Partially		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, ~~atmospheric pressure, absolute pressure,~~ gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		

VII	**Basic Electricity**				**2**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	~~Conductor, insulator, types of connections - series and parallel~~	102-107	1.7.34	Deleted		
3	~~Ohm's law, relation between V.I.R & related problems~~	108	1.7.35	Deleted		
4	~~Electrical power, energy and their units, calculation with assignments~~	112-114	1.7.36	Deleted		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	~~Electrical power, HP, energy and units of electrical energy~~	118-120	1.7.38	Deleted		
VIII	**Mensuration**				**8**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**2**	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**38**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : WIREMAN (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	**Unit, Fractions**				**4**	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	2--3	1.1.02	Retained		
3	Measurement units and conversion	4--13	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	15--16	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	**Square root, Ratio and Proportions, Percentage**				**6**	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	**Material Science**				**2**	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	~~Physical and mechanical properties of metals~~	42-44	1.3.16	Deleted		Covered in theory syllabus
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	~~Difference between iron & steel, alloy steel and carbon steel~~	48-49	1.3.18	Deleted		Covered in theory syllabus
5	~~Properties and uses of rubber, timber and insulating materials~~	50-52	1.3.19	Deleted		Covered in theory syllabus

IV	**Mass, Weight, Volume and Density**				**2**	
1	~~Mass, volume, density, weight and~~ specific gravity	53-54	1.4.20	Partially deleted		
2	~~Related problems for mass, volume, density, weight and specific gravity~~	55-60	1.4.21	Deleted		
V	**Speed and Velocity, Work, Power and Energy**				**2**	
1	~~Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation~~	61-64	1.5.22	Deleted		
2	~~Speed and velocity - Related problems on speed & velocity~~	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	~~Potential energy, kinetic energy and related problems with assignment~~	72-73	1.5.25	Retained		
VI	**Heat & Temperature and Pressure**				**4**	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	~~Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation~~	78-79	1.6.28	Deleted		
4	~~Co-efficient of linear expansion and related problems with assignments~~	80-81	1.6.29	Deleted		
5	~~Problem of heat loss and heat gain with assignments~~	82-85	1.6.30	Deleted		
6	~~Thermal conductivity and insulators~~	86-87	1.6.31	Deleted		
7	~~Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure~~	88-97	1.6.32	Deleted		
VII	**Basic Electricity**				**4**	
1	Introduction and uses of electricity, ~~molecule, atom, how electricity is produced,~~ electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	~~Magnetic induction, self and mutual inductance and EMF generation~~	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	**Mensuration**				**6**	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	~~Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels~~	145-147	1.8.43	Deleted		
IX	**Levers and Simple machines**				**0**	
1	~~Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage~~	148-149	1.9.44	Deleted		
2	~~Lever & Simple machines - Lever and its types~~	150-153	1.9.45	Retained		
X	**Trigonometry**				**0**	
1	~~Measurement of angles~~	154-155	1.10.46	Retained		
2	~~Trigonometrical ratios~~	156-161	1.10.47	Retained		
3	~~Trigonometrical tables~~	162-172	1.10.48	Retained		
4	~~Application in calculating height and distance (Simple applications)~~	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		**30**	

REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

NAME OF TRADE : WIREMAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	**Friction**				**2**	
1	~~Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction~~	1--7	2.1.01	Deleted		
2	Friction - Lubrication	8--11	2.1.02	Retained		
3	~~Friction - Co- efficient of friction, application and effects of friction in workshop practice~~	12--13	2.1.03	Deleted		
II	**Centre of Gravity**				**0**	
1	~~Centre of gravity - Centre of gravity and its practical application~~	14--23	2.2.04	Deleted		
III	**Area of cut out regular surfaces and area of irregular surfaces**				**0**	
1	~~Area of cut out regular surfaces - circle, segment and sector of circle~~	24--26	2.3.05	Deleted		
2	~~Related problems of area of cut out regular surfaces - circle, segment and sector of circle~~	27--28	2.3.06	Deleted		
3	~~Area of irregular surfaces and application related to shop problems~~	29--31	2.3.07	Deleted		
IV	**Algebra**				**10**	
1	Algebra - Addition , subtraction, multiplication & division	32--35	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	36--40	2.4.09	Retained		

V	**Elasticity**				**2**	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	~~Elasticity - Ultimate stress and working stress~~	53-55	2.5.11	Deleted		
VI	**Heat Treatment**				**0**	
1	~~Heat treatment and advantages~~	56-57	2.6.12	Deleted		
2	~~Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening~~	58--66	2.6.13	Deleted		
VII	**Profit and Loss**				**4**	
1	Profit and loss - Simple problems on profit & loss	67--72	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	73--84	2.7.15	Retained		
VIII	**Estimation and Costing**				**10**	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		**28**	