

SYLLABUS

Diploma in Machine Operator

PAPER – I: (Workshop Tools, Measuring Tools and Metals)

UNIT I - Workshop Tools : Standard Rules – Different types of Marking Tools and Punchs – Vice – Different type of Vice – File – Different types of Files – Cutting Tools – Hack saw, Drill bit Taps and Die set – Various type of Spanners – Jigs & Fixtures - Figures – Functions.

UNIT II - MEASURING TOOLS : Standard Steel Rue – Types of Steel Rules – Caliper – Types of Caliper – Precision Tools – Micro Meter – Vernier Sliding Caliper – Vernier Bevel Protractor – Vernier Height Gauges – Function and Structure for Measuring Precision Tools – Gauges – Definition of Gauges-Plug Gauge – Ring gauges – Types of Ring gauges – Types of Ring gauges – Angular gauges – pitch gauges – Thickness gauges – Standardization – Sine Bar – Structure – Slip Gauges – Functions and Uses of Sine Bar and Slip Gauge, Figures.

UNIT III – Metals : Ores – Types of Ferrous Metals – Properties of Ferrous Metals – Iron Manufacturing of Iron – Non Ferrous – Types of Non Ferrous Metals and Properties – Ferrous Alloys – Types of Ferrous Alloys and Properties – Non Ferrous Alloys – Types of Non Ferrous Alloys and Properties, Hardening, Annealing, Tempering.

PAPER – II: (Lathe, Drilling Machine, Safety Measures and Precautions)

UNIT I - Lathe Machine : Structure of Lathe – Parts of Lathe and Operations – Types of Lathe – Attachments – Driving Plate, Phase Plate, Fixed Steady, Follower Rest – Lathe Centres - Types of Centres and Uses – Types of Cutting Tools – Various types of Turning – Types of Thread Cutting – Spindle Speed – Cutting Speed – Feed – Depth of Cut – figures of Lathe Accessories – Types of Coolant and Uses.

UNIT II - Drilling Machine : Functions of Drilling – Types of Drilling Machine – Machine Parts – Holding Devices (Job) – Various types of Drilling Operation – Holding Devices (Drill Bit) – Cutting Speed – Feed – Symbols and Angle for Drill Bit.

UNIT III - Safety Precaution : General Safety Precaution on Workshop Safety Precaution on Hand Tools Safety Precaution on Machine and Equipment – Personal Safety – First Aid.

PAPER – III: (Shaping, Grinding and Milling Machines)

UNIT I - Shaping Machine : Shaping Machine – Types of Shaping Machine – Size and Specification – parts of Shaping Machine – Principle of Operation – Quick Return Mechanism – Stroke Length Adjustment – Feed and Auto Mechanism – Types of Cutting Tools – Holding Devices for job – Various types of Shaping Operation – Cutting Speed, Feed, Depth of Cut – Figures.

UNIT II - Grinding Machine : Grinding Machine – Classification of Grinding Machine – Rough Grinding Process - -Precision Grinding Process – Rough Grinder – Precision Grinder – Parts of Grinding Machine – Working Principle of Grinding Machine – Structure of Grinding Wheel – Types of Grinding Wheel and Shape – Standard Marking System of Grinding Wheel – Selection of Grinding Wheel – Balancing Of Grinding Wheel – Mounting of Grinding Wheel Figures.

UNIT III : MILLING MACHINE : Milling Machine – Types of Milling Machine – Size and Specification – Parts of Milling Machine – Holding Devices – Basic Milling Operation – General Milling Operation – Special Attachments – Types of Milling Cutters – Index head – Indexing Gears – Cutting Speed – Depth of Cut, Feed – Figures.

PAPER – IV: (Arc and Gas Welding)

Arc Welding And Gas And Welding : Electric Arc Welding – Arc Welding Machine and Accessories – Types of Welding – Classification of Welding – Classifications of Welding – Electric Arc and Creative of Electric Arc – Arc length - Arc Blow – Spatter, Arc Crater – penetration – Distortion – Blow Holes – Penetration – Distortion – Blow Holes- Slag inclusion – Porosity – Change of Polarity – Voltage – Current – Types Welding Position – Types of Welding joints – Edge Preparation – Electrode – Types of Electrode – Coding Electrode – Storage of Electrode – Arc Welding for Metals and Non Metals – Special Welding Process – Defects in Arc Welding and Controlling – Gas Welding – Gas Welding Accessories – Types of Welding – Classification of Welding Process – Source of heat – Oxygen, Acetylene Cylinders and Generators – Gases – Manufacturing of Gases – Manufacturing of Calcium Carbide – Regulators – Gas Welding – gas Cutting Blow Pipe – Types of Gas Flame – Methods of Gas Welding and Gas Cutting – Gas Welding on Ferrous Non-ferrous Metals.

PAPER – V: (Engineering Drawing)

Engineering Drawing : Introduction – Drawing Instruments – Different Types of Lines – Lettering and Numbering – Details of Plane and Simple Solid Figures – Dimensions – General Principles of Dimensioning – Surfaces – Types of Surfaces – Geometrical Constructions – Polygon – Parabola – Involute –Types of Scales – Pictorial Drawings – Types of Pictorial Drawings – Method of drawing Circle in Isometric View – Method of Drawing Circles in Isometric View – Method of Drawing Circles and Arcs – Projections – Orthographic Projection – Systems of Orthographic Projection – principles of Drawing Orthographic Projection – Isometric Projection – Sphere – Sectional Views Developments of Surfaces

DIPLOMA IN MACHINE OPERATOR

1. பொது இயந்திரவியல் (பகுதி I, II) – சு.கந்தசாமி 1992, பிரியா பதிப்பகம், சேலம்.
2. மெஷின் டூல் டெக்னாலஜி – குா. இராமச்சந்திரன் சூரத் பப்ளிசர்ஸ், திருச்சி.
3. Workshop Technology – H.S. Bawa 1995, Tata McGraw – Hill Publishing Company Limited, Delhi.
4. மெஷின் ஷாப் டெக்னாலஜி – ஆர். குப்புசாமி, கே. ராமச்சந்திரன் சூரத் பப்ளிசர்ஸ், திருச்சி.
5. Machinist 1st , 2nd year – (Directorate General of Employment & Training, Ministry of Labour, Government of India, 1993, Wiley Eastern Limited, Madras)
6. Turner 1st, 2nd year – (Directorate General of Employment & Training, Ministry of Labour, Government of India 1993, Wiley Eastern Limited, Madras)
7. Fitter Shop Theory –Kapli Dev 1996, Asian Publishers, Roshapura, Delhi.
8. Fitter 1st, 2nd year Trade Practicals, Theory – (Directorate General of Employment & Training, Ministry of Labour of Employment & Training, Ministry of Labour Government of India, 1993, Wiley Eastern Limited, Madras)
9. பொருத்துன தொழிற்பாடமுறை – பகுதி – ஜெயசிங் 1989, ஜெயசிங் பதிப்பகம், நாசரேத், வ.உ.சி. மாவட்டம்.
10. பணிமனை அறிவியல் - ஜெயசிங் ஜெயசிங் பதிப்பகம், நாசரேத், வ.உ.சி. மாவட்டம்.
11. பற்றவைப்பு நுணுக்கங்களும் முறைகளும் - சு.கந்தசாமி 1987, நியூசெஞ்சுரி புக் ஹவுஸ் பிரைவேட், லிமிடெட் சென்னை.
12. Welder Trade Theory, Practical – (Directorate General of Employment & Training Ministry of Labour Government of India)
13. Welding and Welding Technology – Richard L. Little 1996 Tata McGraw – Hill Edition, New Delhi.
14. பொறியியல் வரைப்படம் - பி. ஏ. ஜெயசிங் 1994 ஜெயசிங் பப்ளிசர்ஸ், நாசரேத், வ.உ.சி மாவட்டம்.
15. தொழில் நுட்ப வரைப்படம் - எஸ். எஸ். மணியன், பி ராஜகோபால் 1990, பாலசித்ரா பப்ளிசர்ஸ், கோவலன் நகர், மதுரை-3.
16. Geometrical and Machine Drawing – N.D. Bhatt. 1992, Charotar Publishing House, Anand 388 001.
17. Text Book of Engineering Drawing – R. K. Dhawan 1997 S. Chand & Company Ltd., Ram Nagar, New Delhi.
18. Mechanical Draughtsman ship – G.L. Tamata 1992 Dhanpatrai Sons, Nai Sarak.
19. A Text Book of Engineering Drawing – R.B. Gupta. 1993 Sathya Prakasan, New Market, Rohatak Road, New Delhi.