

ITEM NO.15 & 16 IN PROGRAMME NO.15/2009

CATEGORY NO.202/2008 & 151/2008

DETAILED TOPICS

1. HAND TOOLS USED IN WORKSHOP

Different Types of Hand tools used in workshops, care and Maintenance of Hand Tools, Various operations through the Hand Tools.

2. PRECISION INSTRUMENTS

Instruments used for measuring Length, diameter, thickness etc; measurements, care and maintenance of precision instruments.

3. OPERATIONS OF SHOP MACHINES

Machines used in Instrument work shop; Identification of Various Parts, fixing of Tools & Jobs on Shop machines. Various Operations, Types of Threads. Cutting fluids and their pre-cautions. Engraving Machines and their use.

4. COMMON JOINTS USED IN ENGINEERING WORKS

Definition & Types of Fastenings, Brazing, Crimping etc:

5. PRESSURE AND HEAT MEASUREMENTS

Definitions and units of Gauge, Barometric, Differential, Absolute pressure. Measurement & Calibration of Pressure Instruments, Difference between Heat & temperature, Measurement of Temperature & Heat. Expansion of Solid, Liquid & gases. Thermo Couple & Thermodynamic; Flow heads and Flow meters.

6. BASIC ELECTRICITY

Molecular theory of Electricity. Types of Electricity, Resistance, Voltage & Current, Temperature Co-efficient of Resistance, Specific Resistance, A/C and D/C Electricity, Rate of resistance, Inductance and Capacitance in Electricity, Ohm's Law, Kickoffs Law, A/C & D/C Circuits, Faraday's Laws of Electrolysis, Cell & Battery.

7. ELECTRICAL MEASUREMENT & MEASURING INSTRUMENTS

Classification, Operating Torques of Electrical Measuring Instruments, Types, Constructibn, Operation and Measurements of Various types of Instruments. Merits & Dc-merits of Various instruments; Calibration, Care and Maintenance.

8. BASIC & INDUSTRIAL ELCTRONICS

Semi Conductors, Transistors, PCBs, ICs, Recognize & Re-place Semiconductor Packages, Rectifiers, Filters-Voltage regulators, Power Supplies — Amplifiers- Oscillators and Multi vibrators, invertors and Converters, Multi vibrators, Logic circuits, Micro processors, Computer hardware — CPU operation, ROM, RAM, I/P — O/P peripheral devices — Micro processor applications.

9. FLOW & LEVEL MEASUREMENTS

Properties of Flow-Primary *I* Secondary Measuring devices, variable area Instruments, Open channel flow devices, Positive displacement meters. Turbine and Magnetic flow meters. Surface Sensing gauge, store tank gauge slight glass, Magnetic gauges, Level switches — Pressure head Instruments.

10. RECORDERS AND CONTROLLERS

Construction and working Principles. Various parts, Installation and uses of pneumatic and Electronic recorders. Types of Controllers and their operation — process Variables and set points. Analog controllers, Digital Controllers, Control ranges and limits, ON — OFF Controllers, Proportional controllers, programmable controllers PLCS — Processing and programming functions. Final control elements in control loops — Actuators, control valves.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.