

## Syllabus for Junior Technician (Machinist) – Central Workshop

**Engineering Drawing:** Geometrical construction, lettering and numbering, dimensioning, scales, projection of points and lines, isometric and orthographic projections, rivet heads and joints, screw fastening and freehand drawing.

**Engineering Materials:** Structure and properties of engineering materials, phase diagrams, heat treatment, and stress-strain diagrams for engineering materials.

**Machining and Machine Tool Operations:** Fundamentals of conventional machining processes, basic of machine tools, cutting fluids & coolants, types of cutting tools, tool geometry and materials, tool life and wear. Economics of machining. Basis concepts of the abrasive machining process, Basics of NC/CNC.

**Metrology and Inspection:** Basic concepts of measurements, limits, fits, and tolerance; linear and angular measurements; Measurement of screw threads and gears alignment and testing methods; Tolerance analysis in manufacturing and assembly.

**General Engineering:** Importance of safety and general precautions observed in the industry/shop floor; 5S concept and its application; Response to emergencies e.g., power failure, fire, and system failure.

### Selection Criteria:

#### Level I: (30% weightage)

**Screen Test:** MCQ-type objectives from the above given Central Workshop syllabus

#### Level II: (70% weightage)

**a) Written Test (20% weightage):** Descriptive type questions from the above given Central Workshop syllabus

**b) Practical Test (50% weightage):** Machining and machine tool operations.

#### Level III:

**Skill / Trade Test:** Identification of various Components, Tools, Instruments etc.  
(Qualifying Nature: Minimum 50% score is required to qualify)

## Syllabus for Junior Technician (Welder) – Central Workshop

**Engineering Drawing:** Geometrical construction, lettering and numbering, dimensioning, scales, projection of points and lines, isometric and orthographic projections, rivet heads and joints, screw fastening and freehand drawing.

**Engineering Materials:** Structure and properties of engineering materials, phase diagrams, heat treatment, and stress-strain diagrams for engineering materials.

**Joining and allied Processes:** Arc welding equipment and operator accessories; weld joints and position for arc welding; types of edge preparation; classification of arc welding electrodes; principles of gas welding, arc welding and resistance welding processes, gases used in arc and gas welding, friction welding; weld joint design; principles of soldering, brazing and adhesive bonding; welding defects.

**Metrology and Inspection:** Basic concepts of measurements, limits, fits, and tolerance; linear and angular measurements; Measurement of screw threads and gears alignment and testing methods; Tolerance analysis in manufacturing and assembly.

**General Engineering:** Importance of safety and general precautions observed in the industry/shop floor; 5S concept and its application; Response to emergencies e.g., power failure, fire, and system failure.

### Selection Criteria:

#### Level I: (30% weightage)

**Screen Test:** MCQ-type objectives from the above given Central Workshop syllabus

#### Level II: (70% weightage)

**a) Written Test (20% weightage):** Descriptive type questions from the above given Central Workshop syllabus

**b) Practical Test (50% weightage):** Joining and allied processes.

#### Level III:

**Skill / Trade Test:** Identification of various Components, Tools, Instruments etc.  
(Qualifying Nature: Minimum 50% score is required to qualify)

## Syllabus for Junior Technician (Fitter) – Central Workshop

**Engineering Drawing:** Geometrical construction, lettering and numbering, dimensioning, scales, projection of points and lines, isometric and orthographic projections, rivet heads and joints, screw fastening and freehand drawing.

**Engineering Materials:** Structure and properties of engineering materials, phase diagrams, heat treatment, and stress-strain diagrams for engineering materials.

**Carpentry & Fitting:** Various hand tools and power tools; Types of joints and its use; Linear measurements - its units, dividers, calipers, center punch, dot punch; Types of hammers, files, blades, vice, clamps, and tackles; Method of using hacksaws; Files - specifications, description, materials, and grades; Measuring, angular measurements, subdivisions, try square; Surface plate and auxiliary marking equipment, V block, angle plates, parallel block; Drilling and thread formation; Basic Machining process; Observing standard operating procedures and safety aspects.

**Metrology and Inspection:** Basic concepts of measurements, limits, fits, and tolerance; linear and angular measurements; Measurement of screw threads and gears alignment and testing methods; Tolerance analysis in manufacturing and assembly.

**General Engineering:** Importance of safety and general precautions observed in the industry/shop floor; 5S concept and its application; Response to emergencies e.g., power failure, fire, and system failure.

### Selection Criteria:

#### Level I: (30% weightage)

**Screen Test:** MCQ-type objectives from the above given Central Workshop syllabus

#### Level II: (70% weightage)

**a) Written Test (20% weightage):** Descriptive type questions from the above given Central Workshop syllabus

**b) Practical Test (50% weightage):** Fitting and carpentry.

#### Level III:

**Skill / Trade Test:** Identification of various Components, Tools, Instruments etc.  
(Qualifying Nature: Minimum 50% score is required to qualify)