

**DETAILED SYLLABUS FOR THE POST OF
JUNIOR INSTRUCTOR WELDER IN
INDUSTRIAL TRAINING DEPARTMENT**

(Cat.No. 013/2025)

Module 1- Hand tools **3 marks.**

Steel rule, scriber, punches, hammer, vices, chisel, clamps, hacksaw frame and blades and files.

Module 2- Gas cutting **2 marks.**

Safety in gas cutting, principle of gas cutting and applications, different types of common faults.

Module 3- Gas welding **15 marks.**

Chemistry of oxy acetylene flame, gases use for welding, production of calcium carbide, acetylene gas generators, oxy-acetylene welding equipments, gas welding techniques, faults in gas welding, filler rod and fluxes, welding of aluminium, stainless steel, copper, brass, bronze and cast iron.

Module 4- Arc welding **20 marks.**

Classification of welding process, welding terms, electric welding process, principle of arc welding, metal preparation methods, welding joints and weld, arc length, welding positions, arc welding machines, polarity, arc blow, distortion and its control, defects in arc welding, arc welding electrodes, coding of electrodes, weld symbol and welding symbols.

Module 5- Gas metal arc welding (GMAW) **15 marks.**

GMAW equipments and accessories, wire feed unit, torches, welding wires, shielding gases, modes of metal transfer, GMAW parameters, welding procedure, GMAW defects and trouble shooting.

Module 6- Gas tungsten arc welding (GTAW) 20 marks.

History of GTAW, principle, power source, GTAW torches and electrodes, shielding gases, GTAW parameters, procedure for welding aluminium, stainless steel and other metals, defects and trouble shooting.

Module 7- Special welding process 15 marks.

Submerged arc welding, thermit welding, electroslag welding, friction welding, laser beam, electron beam and resistance welding.

Module 8- Inspection and testing. 5 marks.

Destructive and non destructive tests, welding codes and standards-WPS and PQR

Module 9- Plasma cutting 2 marks.

Cutting process, principle of operation, cutting system, advantages and process variables.

Module 10- Repair and maintenance welding. 3 marks.

Surfacing/metal build up, hard facing, necessity of preheating and post heating.

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.

