

INDIRA TECHNICAL EDUCATION SOCIETY, NASHIK

CERTIFICATE COURSE WELDER (W)(M)

**EXAM SCHEME: THEORY PAPER – I - 100 MARKS – 3 HRS.
PRACTICAL 100 MARKS – 2 HRS.**

THEORY SYLLABUS

1. ARC WELDING

1. Importance of safety, causes of accidents
General safety precautions – work shop safety, self safety and Machine safety.
Arc welding safety precautions to be taken while connection and operating of welding machine.
2. Tools and equipment's require for arc welding.
Basic hand tools – Files, Hammer, Chisel try square calipers and their uses.
Basic measuring tools – Scale & tapes measurements in metric & British units.
3. Arc welding terms and definitions.
4. Basic electricity A.C. & D.C.
Electrical terms – current, voltage watt, resistance etc.
5. Different metal joining processes :-
Mechanical – Riveting, Bolting, Hooking.
Thermal – Soldering, Brazing, Forging, Welding.
Types of joint and their edge preparation.
Distortion, their causes and method to overcome it.
Arc length – short etc. long arc, Advantages and disadvantages of each.
Arc welding it's principles – carbon and metallic arc.
Different types of electrode and their flux coating.
Welding positions – Down hand, horizontal, vertical and over head.
Arc welding machine – Transformers, Generators, rectifier their construction, uses, advantages and disadvantages of each other.
Welding symbol's for various joints.
Welding of ferrous metals, mild steel, cast iron, stainless steel.
Welding of non ferrous metal brass, copper, aluminum.
6. Defect in arc welding their causes & correction.
Testing of weld – various non destructive tests and destructive tests.
Resistance welding spot, butt, seam, Projection welding
Advance welding techniques, Argon arc welding. Co2 welding, submerged welding.

2. GAS WELDING

1. Safety precautions for gas welding.
Safety precautions to be taken for cylinders, regulators while handling the gas welding plant.
2. Gas welding tools and equipment's and it's uses.
3. Common fuel gases used in welding i.e. Hydrogen, Coal gas, Propane and acetylene.
4. Types of various flames and their uses.
5. Types of joints and their preparations.
6. Gas welding torches, their types, uses and construction.
Introduction to high pressure and low pressure gas welding plants Advantages & disadvantages.
Purifier and hydraulic Back pressure valve.
Welding techniques, left ward and right ward techniques.

