

2.15 30215 WELDING IN SHIP CONSTRUCTION

UNIT-1

- 1.1 Introduction to welding Definition of Welding. Classification of different welding processes. Advantages and Disadvantages of welding.
- 1.2 Weldability of steel and carbon equivalent. Comparison of welding with respect to casting.

UNIT-2

- 2.1 Safety in Welding Health and safety of the worker. Safe welding practices.

UNIT-3

- 3.1 Welding Equipment's & welding Processes Gas welding MMAW Process (Equipment's & details) - TIG Welding Process (Equipment and details), MIG/MAG
- 3.2 Welding process (Equipment and details), Submerged Arc Welding Process (Equipment and details). Welding of Aluminium.

UNIT-4

- 4.1 Welding electrodes and consumables Types of welding electrodes (consumable and non-consumable), classification of electrodes, electrode coating.
- 4.2 Selection of electrodes. Care and storage of electrodes.
- 4.3 Classification and coding of MS and low alloy steel electrodes.

UNIT-5

- 5.1 Welding defects Cracks, incomplete penetration, distortion, porosity and blowholes, lack of fusion, poor weld bead appearance, spatter, undercutting slag inclusion and overlapping.
- 5.2 Defects in Aluminium welding

UNIT-6

- 6.1 Weldment Evaluation Non-destructive testing like, Visual Inspection, Leak test, Radiographic test, Magnetic Particle Inspection, Liquid Penetrant Test & Ultrasonic test.

UNIT-7

- 7.1 Welding Procedure, specifications & welders Performance qualification Preheat treatment and post heat treatments of welds.
- 7.2 Welding procedure Specification (WPS) and welder's performance Qualification (WPQ).
- 7.3 Destructive tests like Bend test, tensile test, Impact test & Hardness test.

UNIT-8

- 8.1 Welding positions, weld joints & symbol used in shipbuilding welding
- 8.2 Different welding positions, types of welds, welding symbols, different types of weld joint.
- 8.3 Tack welding

UNIT-9

- 9.1 Special applications of welding & metal cutting processes Spot welding,
9.2 Use of bimetallic strips, single sided welding and under water welding.
9.3 Oxyacetylene cutting, Plasma cutting, Arc Cutting.

Reference books:

1. Welding Technology BY O. P. Khanna
2. Welding Principles & Practices BY Raymond Sacks

