

PMT6J002 JOINING OF MATERIALS

Module I

Theory and classification of welding processes Gas, arc, resistance, pressure, submerged arc, TIG, MIG, plasma arc and electron beam welding including spot welding laser welding and diffusion welding.

Mass and heat flow in fusion welding. Metallurgical effects of the weld thermal cycles.

Module II

Metallurgy of welding of structural steels, HAZ. Metallurgy of fusion welding of ferritic and austenitic steels, cast iron etc. welding pool solidification.

Metallurgical principles of welding nonferrous alloys, Cu alloys, Al alloys etc., welding pool solidification, structure of welds, heat treatment and transformation.

Module III

Welding stresses and stress relieving treatments.

Design of welded joints, welding defects and their remedies. Inspection and testing of weldments.

Brazing and soldering. Joining of ceramics and plastics.

Books for reference:

1. *Metallurgy of Welding*, by J.F.Lancaster, Allen and Unwin.
2. *Welding and Welding Technology* by R.L.Little, TMH.
3. *Welding* by A.C. Davies, Cambridge University Press.
4. *Metallurgy of Welding* by Sefarin, John Wiley.
5. *Welding Processes Handbook*, K. Weman, Woodhead.