AMAE-06 MANUFACTURING TECHNOLOGY

UNIT-1 CASTING

1.1 Casting types, procedure to make sand mould, types of core making, moulding tools, machine moulding, special moulding processes- CO2 moulding;

1.2 Shell moulding, investment moulding, permanent mould casting, pressure die casting, centrifugal casting, continuous casting, casting defects.

UNIT-2 WELDING

2.1 Classification of welding processes.

2.2 Principles of Oxy-acetylene gas welding.

2.3 A.C metal arc welding, resistance welding, submerged arc welding, tungsten inert gas welding, metal inert gas welding, plasma arc welding, thermit welding, electron beam welding, laser beam welding, defects in welding, soldering and brazing.

UNIT-3 MACHINING

3.1 General principles (with schematic diagrams only) of working and commonly performed operations in the following machines:

3.2 Lathe, Shaper, Planer, Horizontal milling machine,

3.3 Universal drilling machine, cylindrical grinding machine, Capstan and Turret lathe.

3.4 Basics of CNC machines. General principles and applications of the following processes:

3.5 Abrasive jet machining, Ultrasonic machining, Electric discharge machining, Electro chemical machining, Plasma arc machining, Electron beam machining and Laser beam machining.

UNIT-4 FORMING AND SHAPING OF PLASTICS

4.1 Types of plastics

4.2 Characteristics of the forming and shaping processes- Moulding of Thermoplastics-

4.3 Working principles and typical applications of Injection moulding-

4.4 Plunger and screw machines- Blow moulding- Rotational moulding- Film blowing- Extrusion- Typical industrial applications- Thermoforming

4.5 Processing of Thermosets- Working principles and typical applications - Compression moulding- Transfer moulding- Bonding of Thermoplastics- Fusion and solvent methods- Induction and Ultrasonic methods

UNIT-5 METAL FORMING AND POWDER METALLURGY

5.1 Principles and applications of the following processes:

5.2 Forging, Rolling, Extrusion, Wire drawing and Spinning, Powder metallurgy-

5.3 Principal steps involved advantages, disadvantages and limitations of powder metallurgy.

References Books:

1. Jain. R.K., and S.C. Gupta, “Production Technology”, 16th Edition, Khanna Publishers, 2001.
2. “H.M.T. "Production Technology – Handbook”, Tata McGraw-Hill, 2000.