AMPTE08 MOULD MANUFACTURING ENGINEERING

UNIT-1 MOLD MAKING

1.1 Materials used in mold making , Introduction of mold parts,
1.2 Mechanism of metal cutting, types of tools, influence of tool angles,
1.3 Cutting fluids, Tool materials used including coated tools.
1.4 Studies of various machining operations: Turning, Shaping, Planning, Drilling, Grinding (Surface, Cylindrical, Tool & Cutter, Rotary Grinding), Milling (Horizontal / Copy Milling / Vertical / Ram / Tool Milling).

UNIT-2 COPY MILLING

2.1 Pentograph, Profile grinding, Electrical discharge machining
2.2 Types of EDM, design consideration & functions and technological planning.
2.3 Applications of wire cut EDM in mold making. CNC Controlled Machines (Lathe, milling)

UNIT-3 ELECTROFORMING FOR MOLD MANUFACTURING

3.1 Discussion of the process, materials for electroforming, design & materials for models, machining for electroformed blanks, mold cavities, economy & service life.
3.2 Hobbing for mold making- Discussion of the hobbing process & its advantages,
3.3 Elements of hobbing like hobbing punch, shape of the hob, materials used for cavity, lubrication, and depth of hobbing,
3.4 Hobbing presses, Hobbing operations & its economy with examples.

UNIT-4 POLISHING TECHNOLOGY IN MOLD MAKING

4.1 Definition of surface roughness, basis of polishing technology,
4.2 Effect of mold materials on polishability, Types of polishing tools, Methods of polishing
4.3 Basic information on Electro sonic polishing
4.4 Principles of Electro deposition in damaged molding surfaces.
4.5 Surface Texturing of molds - Process description, types of molds, types of patterns and mold shapes, metals that can be etched, mold preparation, limitations of chemical texturing.

UNIT-5 METROLOGY AND INSPECTION

5.1 Scope of inspection, Procedures, Choices of basic measuring instruments, Vernier, Micrometer, Surface Plates, Angle plates, Squares,
5.2 Vernier height gauges, Depth gauges, Slip gauges, Dial gauges, Hardness testing, Comparators, Optical profiles projectors, Tool makers microscope,
5.3 Optical flats - types and uses.

References Books:

1. Bhattacharya, A New Technology, IB Publishers, 1984
2. C-B & Liv C.N.K. Computer aided design & manufacture, East West Press, P.C.Pandey & H. S. Shah, Modern Machining Processes, TMH, 1990
3. R.G.W.Pye, Injection Mold Design, East West Press Pvt. Ltd., New Delhi.