MODULE-1

1. Give the classification of various kinds of Production Processes and also state their applications areas.
2. State the common materials used in pattern-making and also explain any two with its advantages and its limitations.
3. List down and explain the types of pattern allowances.
4. Explain the types of patterns.
5. Give the typical moulding sand composition for steel and iron castings.
6. Depending upon the location, give the types of riser and explain any one of the riser.
7. List and explain the types of gates depending upon the level of molten metal entering the mould cavity.
8. List down and explain the types of casting defects and their causes and remedies.
9. With the help of diagrams, explain the following machine moulding methods : Squeeze moulding, Jolt moulding and Sand slingers.
10. Explain the precision investment casting methods.

11. Explain die casting process. Also give the main reasons for wide spread of pressure die casting and state its limitations.
12. Explain the CO_2 moulding process.
13. Draw and explain plunger type injection moulding process with its advantages, Limitations and applications
14. Draw and explain significance of various elements of the gating system in sand casting.

MODULE-2

1. Explain material joining process.
2. What is adhesive bonding? Also state the typical joints used for adhesive bonding and its commercial use.
3. What is mechanical fastening?
4. Give the classification of welding and allied processes.
5. Give the sequence which is required to be followed for welding.
6. How is the welding position selected?
7. Give the defects of spot and flash welding and explain them.
8. Differentiate between TIG and MIG welding.

9. Discuss the different types of flames in gas welding.
10. Draw and explain in brief the various welding defects, their causes and remedies.

MODULE-3

1. Give the advantages of Sheet metal working processes.
2. Define the forging process. Give the advantages and drawbacks of the forging process.
3. Differentiate between hot working and cold working of metals. Bring out the advantages and disadvantages of each of these techniques.
4. Discuss the various defects in rolled and forged components.
5. Define the extrusion process. List down the advantages and disadvantages of an extrusion process.
6. Short note on the wire drawing process.
7. Short note on tube drawing process.
8. Discuss sheet metal working or press working of sheet metals.
9. Explain Classification of presses.
10. List down and explain the types of dies.

11. **Write short notes on** Open die and Closed die forging.

MODULE-4

1. What is a lathe machine? Classify lathe-type machine tools.
2. List down and explain the types of milling machines.
3. Discuss drilling machines and draw a neat sketch of a twist drill.
4. Give the classification of grinding machines and explain any one of them with a neat sketch in detail.
5. List down the factors based on which grinding wheel selection is done.
6. Short note on truing and dressing of grinding wheels.
7. What is a broaching machine? Explain the types of broaching machines with a neat sketch.
8. Short note on the lapping process. Explain the lapping methods.
9. Explain the vertical spindle honing machine with a neat sketch.
10. Explain horizontal shaper machine with a neat sketch.

11. Explain and draw a block diagram of the slotter machine.
12. Explain a double house planar machine with a neat sketch.
13. List down and explain the types of milling cutters.
14. Discuss the hobbing process.
15. Define the shaving process.
16. Discuss gear teeth grinding with a neat sketch.
17. Draw a neat sketch of a single-point cutting tool and explain all the elements and angles.
18. Discuss the mechanism of chip formation and explain the types of chips with a neat sketch.
19. Define jigs and fixtures and their types.
20. Knee type horizontal milling machine
21. Draw and explain various operations perform on lathe machine
22. In a cutting test with 0.3mm flank wear as tool failure criterion, a tool life of 10 min was obtained at a cutting velocity of 20 m/min taking tool life exponent as 0.25, tool life in min at 40 m/min find cutting velocity.

MODULE-5

1. Discuss the Electrochemical machining (ECM) process in detail with a neat sketch.
2. What is the principle of EDM? Explain the functions of dielectric fluid in EDM.
3. Compare the similarities and differences of ECM and EDM.
4. Explain the principle of USM. The common materials used for the tool is USM.
5. What is the difference between USM and conventional grinding?
6. Contrast LBM and EBM.
7. List the product applications of LBM.

MODULE-6

1. What are thermoplastics and thermosetting materials?
2. Explain why thermoplastics are easier to recycle than thermo-setting plastics?
3. List down the applications of Plastics in the engineering field.
4. Discuss the compacting process.
5. Discuss the sintering process.
6. Short note on Cyber-physical systems (CPS).

7. What is the Internet of Things (IoT) enabled manufacturing?
8. Short note on Cloud Manufacturing.
9. Various steps involved in powder metallurgy