

May 2025

B.Tech. (Mech.) (Fourth Semester)

Manufacturing Processes (PCC-ME-405/21)

Time : 3 Hours]

[Maximum Marks : 75

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) What are the materials that are generally used for preparing patterns ? 1.5
- (b) State the essential ingredients of a moulding sand. 1.5
- (c) Briefly explain the principle of rolling with a neat sketch. 1.5
- (d) State the working principle of a drilling machine. 1.5
- (e) State the operations which can be performed on a lathe machine. 1.5

- (f) What do you mean by tool signature ? 1.5
- (g) State the factors on which machinability depends. 1.5
- (h) Enumerate the various methods of gear finishing. 1.5
- (i) What is arc length ? 1.5
- (j) What is the difference between soldering and brazing ? 1.5

Part B

- 2. (a) What do you understand by the term gating system ? Explain the different elements of a gating system. 10
- (b) Describe desirable properties of a moulding sand. 5
- 3. (a) Explain briefly the various methods of cold extrusion with neat sketches. 10
- (b) Describe briefly the following methods of forging : 5
 - (i) Drop forging
 - (ii) Press forging

4. (a) Describe with a neat sketch, the main parts of a shaper machine. 10
- (b) What are the functions of cutting fluids ?
State the requirements of a good cutting fluid. 5
5. (a) Explain briefly the following types of chips : 10
- (i) Continuous chip
 - (ii) Discontinuous chip
 - (iii) Built-up chip.
- (b) State the factors which affect tool life. A tool gave a tool life of one hour between regrinding while rough cutting at 20 m/min. What will be its probable life when engaged in performing finishing operation, given $n = 1/8$ for roughing and $1/10$ for finishing ? 5
6. Briefly describe the following gear manufacturing methods : 7.5×2=15
- (i) Gear Hobbing
 - (ii) Gear shaping.

7. (a) Describe the type of flames obtained in an oxy-acetylene gas welding process. Also give their applications. 10
- (b) Explain the working principle of the following welding processes : 5
- (i) Arc welding
 - (ii) Resistance welding.

