

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (ME)(Sem.–5)

**MANUFACTURING PROCESSES**

Subject Code : BTME-503-18

M.Code : 78249

Date of Examination : 18-06-2024

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**1. Write briefly :**

- a) Name two casting defects and give their reasons and remedies.
- b) Enlist the parameters on which solidification time depends in metal casting.
- c) Write the applications of shapers.
- d) What are the specific merits of cold working over hot working?
- e) Discuss the effect of amplitude and frequency of vibration on surface finish obtained in ultrasonic machining.
- f) What is meant by rapid tooling?
- g) List the two major advantages and limitations of powder metallurgy process.
- h) List reasons for the development of unconventional machining processes.
- i) How do you define a tool life?
- j) Differentiate between brazing and soldering.

## SECTION-B

2. List out applications of rapid prototyping. Discuss the steps followed in rapid prototyping process.
3. Explain the elements of gating system giving a neat sketch and explain the significance of various elements.
4. What is meant by solid state welding? Explain the principle underlying the seam welding process. What are the faying surfaces in solid-state welding processes? Enlist the names of products wherein this process is used.
5. What is meant by grain fineness number? Explain the procedure for determining this number for a moulding sand.
6. Describe briefly the factors that influence the quality of cut in Plasma Arc Machining (PAM). Discuss the process capabilities of Electron Beam Machining (EBM).

## SECTION-C

7.
  - a) Define the term "Machinability". Discuss the various types of chips produced during metal machining. Why are discontinuous chips preferred over continuous type?
  - b) What do you understand by Heat affected Zone (HAZ) in welding? How does HAZ affect weld zone performance?
8.
  - a) "*Natural sand is often not suitable for moulding purposes.*" Comment on this statement by giving reasons.
  - b) Describe the press and die setup. Also, explain the forging operations using progressive and combination dies giving neat sketches.
9.
  - a) Explain the methods of obtaining metal powders used in powder metallurgy process with the help of neat sketches.
  - b) What is the principle of Electrochemical Machining (ECM)? Describe the chemistry involved in the ECM process. Enlist the elements of ECM process with a neat sketch.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**