Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech. (ME) (ME & A) (Sem.–1)

MODERN MANUFACTURING PROCESSES

Subject Code : MTME-102

M.Code : 91563

Date of Examination : 17-01-23

Time : 3 Hrs. **Max. Marks: 100**

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carry TWENTY marks.**

1. a) Explain in brief the classification of modern manufacturing processes.

   b) What prompted the development of unconventional machining processes?

   c) What are the essential physical process parameters for an efficient use of modern machining processes?

2. a) Explain with neat diagram the construction and working of AJM process.

   b) Explain the following parameters with respect to USM:

      (i) Effect of slurry concentration and hardness of abrasive particle/ work-piece.

      (ii) Effect of standoff distance and grain diameter.

3. a) Explain with neat diagram the construction and working of Magnetic abrasive finish process.

   b) Define Abrasive Jet Machining process and its working principle.

4. a) Calculate the MRR and electrode feed rate when copper is electrochemically machined under following conditions: specific resistance to electrolyte (ρs) = 5 Ωcm, ΔV = 18V, I = 500 A, Tool gap = 0.5 mm, atomic weight = 56, valence = 2, and ρ = 7.8 g/cm^3.

   b) Explain with diagram the working principle of the Shaped Tube Electrolytic Machining (STEM)

5. a) Explain in detail the different methods for powder production.

   b) Discuss the advantages, limitations and applications of powder metallurgy method.

6. Write a short note on the following :

   a) CVD and its applications.

   b) Additive manufacturing and classifications of AM processes.

7. With the help of a neat sketch, explain the electrochemical deburring process. What are its applications? How can you protect the areas where the dissolution of the material is not desirable?

8. a) Explain in detail the working of WEDM process and its technical and economic limitations as compare to the conventional cutting processes.

   b) Describe in detail the working, process parameters, equipment and mechanism of material removal of Electron Beam Machining.

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