

Reg. No. :

Question Paper Code : 30941

M.E./M.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.

First Semester

Manufacturing Engineering

MF 4101 – ADVANCES IN MANUFACTURING PROCESSES

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is over cut in EDM?
2. What are the modes of operation of D.C plasma torches used in PAM?
3. List out the functions of the electrolyte used in ECM.
4. What is the purpose of chemical mechanical polishing?
5. What are the advantages of Warm Forging?
6. What is the most important parameter in hydra forming?
7. Mention few applications of Micro EDM.
8. What are the drawbacks in isotropic etching?
9. Why surface deviation occurs in Selective laser Sintering (SLS)?
10. What products use dip coating?

PART B — (5 × 13 = 65 marks)

11. (a) Explain the classification of unconventional manufacturing processes based on source of energy, transfer media and mechanism.

Or

- (b) Discuss the following process details of Laser Beam Machining.
 - (i) Apparatus (with sketch)
 - (ii) Thermal features of laser machining.

12. (a) Explain the process of ECG. State the accuracy and surface finish obtained from the process.

Or

- (b) Enumerate the suitability of Ultra-precision turning method for machining optical freeform surfaces.

13. (a) List out the liquid medium and its requirement used in electro hydraulic forming and explain the process.

Or

- (b) Discuss Orbital Forging with a neat sketch. Mention its relative merits and applications?

14. (a) Enumerate with a case study how molecular dynamics simulation models will be useful in determining optimum process parameters of Nano machining.

Or

- (b) Discuss on the micro-EDM process including the physics of the process, sparking and gap phenomena.

15. (a) Explain the process, limitations and applications of SLA with neat diagram.

Or

- (b) Discuss on advantages, Limitations and Applications of Rapid Prototyping Processes.

PART C — (1 × 15 = 15 marks)

16. (a) Through a case study, discuss on the importance of quantum dots in nanotechnology.

Or

- (b) Explain the fabrication of micro channels in bulk silicon and glass using the any two micro machining techniques.