Reg. No. : | | | | | | | | | | | | |

Question Paper Code: 4023221

M.E/M.Tech. DEGREE EXAMINATIONS, NOV/ DEC 2024
Third Semester
CAD / CAM
P23CCT31 – ADVANCED MANUFACTURING PROCESSES
(Regulation 2023)

Time: Three Hours Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. What are the methods of surface cleaning?

2. What are the benefits of organic coating?

3. What is the need for unconventional machining processes?

4. Identify the mechanism of material removal, transfer media and energy source for EDM.

5. What are the main functions of electrolysis in the ECM?

6. Identify the mechanism of material removal, transfer media and energy source for PAM.

7. List out any four ceramics used in engineering applications.

8. What is a particulate reinforced composite?

9. What is film deposition on silicon wafer?

10. What is the use of computer aided design in microelectronics?

PART – B (5 x 16 = 80 Marks)

11. (a) Compare and contrast thermal spraying and diffusion coating in terms of their principles, processes, advantages, and applications in surface engineering. (16)

(OR)

(b) Discuss and differentiate Electroforming and Chemical Vapor Deposition (CVD) in terms of their principle, process, advantages, and limitations. (16)

12. (a) Discuss the Abrasive Jet Machining (AJM) process in detail, covering its construction, working principle, key process parameters, advantages, and limitations. (16)

(OR)

(b) Describe Water Jet Machining, focusing on its principle, equipment, process characteristics, and performance metrics. Highlight its advantages and limitations in industrial applications. (16)

13. (a) Analyse the Electron Beam Machining (EBM) process in terms of its construction, working principle, key process parameters, advantages, and limitations. (16)

(OR)

(b) Analyse how Plasma Arc Machining works, including the following aspects: the principle behind it, the equipment used, key process parameters, its advantages, disadvantages, and potential applications. (16)

14. (a) Discuss the processing of particulate ceramics in detail, covering powder preparation, consolidation, drying, sintering, hot compaction, areas of application, and finishing techniques. (16)

(OR)

(b) Discuss the Hand Lay-Up method and Spray-Up method for Polymer Matrix Composites (PMCs) with neat sketch, highlighting their principles, advantages, limitations, and applications. (16)

15. (a) Discuss the various processes involved in the fabrication of microelectronic devices, including lithography, etching, doping, and deposition techniques. Highlight their principles, advantages, limitations, and applications. (16)

(OR)

(b) Discuss the various micro-machining processes, highlighting their working principles and applications in different industries. (16)

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