

Reg. No. :

Question Paper Code : 40797

M.E./M.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

First Semester

Manufacturing Engineering

MF 5101 — ADVANCED IN MANUFACTURING TECHNOLOGY

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the function of Transducer in USM process?
2. List the process parameter which controls the abrasive jet machining
3. How will you specify an Aspheric surface?
4. Why is coarse grain and open structured wheel is preferred for stock removal grinding?
5. What is Isothermal forging and which material is considered?
6. What is distinct in isostatic hot pressing process?
7. List the process parameters to be considered for chemical etching.
8. What is the principle of Molecular manufacturing?
9. What is Reactive sputtering?
10. Mention the factors that influence deposition rate in PLD.

PART B — (5 × 13 = 65 marks)

11. (a) Describe the Plasma Arc machining process with a simple sketch and explain its process parameters which influence the machining output.

Or

- (b) Derive an expression for metal removal rate in USM in terms of frequency, properties of materials average static pressure etc.

12. (a) List the different methods of CMP and briefly explain the role of CMP in semiconductor manufacturing process.

Or

- (b) Describe the stages for generating aspherical surface. Mention the salient features of this technique.

13. (a) What do you mean by super plastic forming process. Describe its process parameters for consideration and its effect on output.

Or

- (b) Explain the working principle of Electro-hydraulic forming with neat sketch. List some real-time application of this process.

14. (a) What is the bottom-up synthetic approach? Name the three synthetic methods where the bottom-up approach is employed.

Or

- (b) What is the nanotechnology? Describe the basic approaches for nanomaterial and nanostructure production, give an example for each.

15. (a) Describe the SLS process with sketch and bring out its salient features and its concurrent applications.

Or

- (b) With a schematic, explain the working principle and processing steps of diffusion coating.

PART C — (1 × 15 = 15 marks)

16. (a) Discuss the recent trend and its new found applications of Additive manufacturing or Rapid prototyping in terms of FDM with a case study.

Or

- (b) Discuss the recent trends and its direct applications in microchip manufacture with regards to nano fabrication techniques.