Reg. No.

Time: 3 Hours   Answer ALL Questions   Max. Marks: 100

PART- A (10 x 2 = 20 Marks)

1. State the three aspects in defining a prototype in additive manufacturing?

2. State the needs of Rapid Manufacturing?

3. Differentiate Raft from Brim?

4. What are the types of Tool Path available in Additive Manufacturing?

5. What is meant by Two Photon approach in SLA?

6. Write any four materials used in EBM process?

7. Is it possible to manufacture thin walled components by LOM? State the reasons?

8. What is called road width in FDM?

9. Why LENS System are typically coupled with Nd: Yag lasers? Justify.

10. What are the limitations of Droplet formation technologies?

PART- B (5 x 13 = 65 Marks)

11. a) Explain the indirect Rapid tooling techniques for manufacturing tools?   (13)

OR

b) (i) Write the applications of additive manufacturing with respect to Aerospace Industry and Medical Field? (8)

(ii) Explain in detail about the Rapid Prototyping in Product Development and how it differs from conventional prototyping? (5)

12. a) (i) Explain the significance of part orientation and support structure generation on part quality of additive manufactured parts? (8)

(ii) Elaborate the Data processing formats for additive manufacturing technology? (5)

OR

b) (i) Enumerate the different types of CAD Model slicing procedure in additive manufacturing. (8)

(ii) Elaborate the customized design and fabrication for medical applications with an example? (5)

13. a) Explain the additive manufacturing process which uses photosensitive polymeric resin with neat sketch? (13)

OR

b) Explain the suitable additive manufacturing process used in marine industries for infrastructure work in detail with appropriate sketch? (13)

14. a) Explain any one of the solid based AM process w.r.t. principle, process parameter, basic elements advantages, disadvantages and applications with neat sketch. (13)

OR

b) Explain the suitable additive manufacturing process used in dental implants in detail with appropriate sketch? (13)

15. a) Enumerate the basic elements, materials, process parameters, advantages, disadvantages and applications of Three-Dimensional (3DP) printing? (13)

OR

b) Explain the Additive Manufacturing process used for making tools using Titanium alloys? (13)

PART- C (1 x 15 = 15 Marks)

16.   a)   (i) Explain the role of Additive Manufacturing in Industry 4.0?   (8)

             (ii) Explain the DFAM for part quality improvement?   (7)

OR

    b)   Explain the Bioextrusion process in the field of tissue engineering with a case study?   (15)

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