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18ME741

Seventh Semester B.E. Degree Examination, June/July 2023
Additive Manufacturing

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. Define additive manufacturing. How it is distinct form CNC machining. **(10 Marks)**
    b. Briefly explain various classifications of AM processes. **(10 Marks)**

OR

2   a. Explain the eight steps involved in AM Process chain. **(10 Marks)**
    b. Explain the following build related factors :
       i) Part orientation   ii) Removal of supports. **(10 Marks)**

Module-2

3   a. Explain the following concepts : i) Microstereolithography
                                        ii) Photopolymerization materials. **(10 Marks)**
    b. With a neat sketch, explain the process of selective laser sintering process. **(10 Marks)**

OR

4   a. List out the various process parameters of PBF and briefly explain them. **(10 Marks)**
    b. With a neat sketch, explain the extrusion based system. **(10 Marks)**

Module-3

5   a. Explain the process of three dimensional printing. **(06 Marks)**
    b. Mention the advantages of binder jetting. **(04 Marks)**
    c. With a neat sketch, explain the process of ultrasonic consolidation. **(10 Marks)**

OR

6   a. Explain the process of Laminated object manufacturing with a neat diagram. **(10 Marks)**
    b. Differentiate between form then bond and bond then form. **(04 Marks)**
    c. List out the UC process parameters and explain how these effect bonding. **(06 Marks)**

Module-4

7   a. Explain decision theory concept for selection method for a part. **(10 Marks)**
    b. Explain the concept of production planning and control. **(10 Marks)**

OR

8   a. Explain the various problems associated with STL file. **(10 Marks)**
    b. List out various post processing technique s. Explain any two in detail. **(10 Marks)**

Module-5

9   a. Example the following concepts with respect to additive manufacturing :
       i) Discrete multiple material processes   ii) Porous multiple material process. **(10 Marks)**
    b. Explain the various challenges faced by multiple materials for future direction. **(10 Marks)**

OR

10 a. Elaborate the various applications of AM. **(10 Marks)**
    b. What are DDM drivers? Explain the various factors which enable applications. **(10 Marks)**

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