CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐ **18MA63**

Sixth Semester B.E. Degree Examination, July/August 2022
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. Explain the steps in additive manufacturing. (08 Marks)
 b. Give an overview of evaluation of additive manufacturing. (12 Marks)

OR

2 a. Distinguish between additive manufacturing and CNC machining. (10 Marks)
 b. Describe Molten Material System and Solid Sheet Systems. (10 Marks)

Module-2

3 a. Explain in detail about additive manufacturing process chain. (08 Marks)
 b. Explain in brief an overview 01 CAD data conversion to STL format. (12 Marks)

OR

4 a. Explain in detail about the post processing steps in additive manufacturing of AM parts. (12 Marks)
 b. Discuss about STL conversion and file manipulation. (08 Marks)

Module-3

5 a. What are the core DFAM concepts and objectives? (10 Marks)
 b. Write a note on : (i) Shape complexity (ii) Functional complexity. (10 Marks)

OR

6 a. Explain the following factors related to setup AM :
   (i) Part orientation (ii) Removal of supports.
   (iii) Interlocking features (iv) Reduction of part count in an assembly. (15 Marks)
 b. With an example, explain medical modeling by using AM concept. (05 Marks)

Module-4

7 a. Describe the challenges for selection of a AM machine for production of a AM component. (10 Marks)
 b. Explain about production planning and control in AM process. (10 Marks)

OR

8 a. Discuss the steps in post processing of additive manufacturing parts. (12 Marks)
 b. Explain the non thermal and thermal techniques in additive manufactured parts. (08 Marks)

Module-5

9 a. Explain about pattern for investment and vaccum costing and Rapid tooling. (10 Marks)
 b. Write a note on new material development for additive manufacturing. (10 Marks)

OR

10 a. Write a short note on the following topics :
   (i) Bimetallic parts (ii) Use of Bimetallic parts. (10 Marks)
 b. Explain about aerospace applications of additive manufactured components. (10 Marks)

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