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## 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 of 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 vacuum casting 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)