

# CBCS SCHEME

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15MA63

## Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019 Additive Manufacturing

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Explain: i) Automated Fabrication ii) Freeform Fabrication iii) Rapid prototyping. (12 Marks)  
b. Explain in brief steriolithography process. (04 Marks)

**OR**

- 2 a. Explain the benefits of Additive manufacturing. (04 Marks)  
b. Explain : i) Liquid Polymer System ii) Discrete Particle System  
iii) Molten Material System. (12 Marks)

### Module-2

- 3 List and explain briefly the generic process of additive manufacturing with neat diagram. (16 Marks)

**OR**

- 4 a. Explain briefly the part removal and post processing in additive manufacturing. (08 Marks)  
b. Explain briefly power based molten based system. (08 Marks)

### Module-3

- 5 Explain : a) Part orientation b) Removal of supports  
c) Hollowing out parts d) Inclusion of undercuts (16 Marks)

**OR**

- 6 Explain :  
a. Additive manufacturing unique capabilities and design freedom (10 Marks)  
b. Concept of DFMA. (06 Marks)

### Module-4

- 7 a. Explain in brief any two selection methods for additive manufacturing part. (08 Marks)  
b. Explain in brief the production planning and control associated with additive manufacturing part. (08 Marks)

**OR**

- 8 a. Explain in detail the two types of support materials used in additive manufacturing. (08 Marks)  
b. Explain: i) Error sources ii) Model pre-Processing. (08 Marks)

### Module-5

- 9 a. Explain any four instances where additive manufacturing models can be applied for medical applications. (08 Marks)  
b. Explain in detail, how additive manufacturing can be used to build patterns for investment and vacuum casting. (08 Marks)

**OR**

- 10 a. List the applications of additive manufacturing in the field of aerospace and automobile engineering. (08 Marks)  
b. Explain the brief the role of additive manufacturing in building functional prototypes. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.