CBCS SCHEME

USN | | | | | | | | | |

15MA63

Sixth Semester B.E. Degree Examination, June/July 2019
Additive Manufacturing

Time: 3 hrs. Max. Marks: 80

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Draw the neat sketches wherever required.

Module-1

1 a. Compare between AM and CNC machining. **(05 Marks)**
b. Enumerate the advantages of AM. **(04 Marks)**
c. With a neat sketch, explain Molten material systems. **(07 Marks)**

OR

2 a. Explain with a neat sketch, liquid polymer system. **(08 Marks)**
b. Explain solid sheet system with a neat diagram. **(08 Marks)**

Module-2

3 Explain the following with respect to AM process chain:
i) Conceptualization
ii) Conversion to STL
iii) Transfer to AM
iv) CAD. **(16 Marks)**

OR

4 a. Explain the machine setup, build, removal and clean up in AM process chain. **(10 Marks)**
b. Explain STL file manipulation in AM process chain. **(06 Marks)**

Module-3

5 a. Explain briefly the concepts and objectives of DFMA. **(10 Marks)**
b. Enumerate the unique capabilities of AM. **(06 Marks)**

OR

6 a. Explain the design tools for AM. **(06 Marks)**
b. Explain the following:
i) Hollowing out parts
ii) Inclusion of undercuts and other manufacturing constraining features. **(06 Marks)**
c. Explain part orientation and removal of supports with respect to AM. **(04 Marks)**

Module-4

7 a. Explain the selection methods for a part in AM. **(10 Marks)**
b. Explain the production planning and control. **(06 Marks)**

OR

8 Explain the following with respect to post processing of AM parts:
i) Property enhancements using non thermal and thermal techniques. **(10 Marks)**
ii) Texture, accuracy and aesthetic improvements. **(06 Marks)**

Module-5

9 a. Explain the pattern for investment and vacuum casting for AM process. **(10 Marks)**

b. Explain rapid tooling. **(06 Marks)**

OR

10 Explain the applications of AM in the following fields:

i) Aerospace

ii) Defense

iii) Biomedical

iv) General engineering industries. **(16 Marks)**

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