CBCS SCHEME

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15ME82

Eighth Semester B.E. Degree Examination, Jan./Feb. 2023
Additive Manufacturing

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. With a schematic diagram, explain the AM Process Chain. **(08 Marks)**
b. Distinguish between Additive Manufacturing and CNC Machining. **(04 Marks)**
c. Enumerate the applications of AM in various fields. **(04 Marks)**

OR

2 a. With a neat sketch, explain the Liquid Polymer System. **(08 Marks)**
b. Explain the FDM process, with a neat sketch. **(08 Marks)**

Module-2

3 a. With a neat sketch, explain the working of a Gear Motor. **(08 Marks)**
b. With circuit diagrams, explain the classification of DC Motors. **(08 Marks)**

OR

4 a. Explain the following : i) Relays ii) Diodes iii) Thyristors and Triacs iv) Solenoids. **(08 Marks)**
b. Write a brief note on Piezoelectric Actuator. **(04 Marks)**
c. Explain the use of Shape Memory Alloys as Actuators. **(04 Marks)**

Module-3

5 a. Explain the Dry Spinning of Polymer fibres, with neat sketch. **(08 Marks)**
b. Explain with a neat sketch, the Compression Moulding Polymer Processing Technique. **(08 Marks)**

OR

6 a. With a schematic diagram, explain the different methods of Atomization of powder. **(09 Marks)**
b. Explain with schematic diagrams, Cold and Hot Isostatic pressing. **(07 Marks)**

Module-4

7 a. With a schematic diagram, explain the Sol – gel process of synthesis of Nano particles. **(08 Marks)**
b. Explain the Bottom - up and Top – down approaches of Nano material fabrication. **(08 Marks)**

OR

8 a. With a schematic diagram, explain working principle and Imaging of TEM. **(08 Marks)**
b. Explain the working principle and Technology of Scanning Probe Microscope (SPM) with sketch. **(08 Marks)**

Module-5

9 a. Explain the NC words used in CNC Machines with example. (08 Marks)

b. Write Computer Aided Part Programming (APT) for the Fig. Q9(b). Assume suitable cutting parameters.

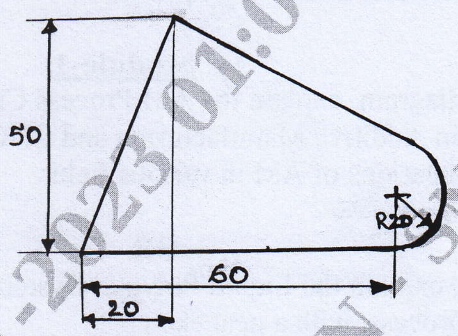

Fig. Q9(b) All dimensions are in mm. (08 Marks)

OR

10 a. Explain briefly the ten strategies of Automation. (10 Marks)

b. Explain the three advanced automation functions. (06 Marks)

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