Total No. of Questions : 8]

SEAT No. :

PD4707

[Total No. of Pages : 2

[6404]-213

B.E. (Mechanical)

ADDITIVE MANUFACTURING

(2019 Pattern) (Semester - VII) (402045C) (Elective - IV) (Theory)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks***
4) ***Assume suitable data wherever necessary.***

Q1) a) Explain process Direct Ink Writing (DIW) and Robocasting with suitable sketch. **[9]**

b) Explain process Direct Metal Deposition (DMD) with suitable sketch. **[9]**

OR

Q2) a) Explain process TIG deposition in additive manufacturing. List its Benefits, Limitations and Applications. **[9]**

b) Write short notes on Extrusion. Give its advantages and disadvantages. **[9]**

Q3) a) Explain different quality considerations in A.M. **[9]**

b) Explain Robocasting and Bio printing with suitable example. **[8]**

OR

Q4) a) Explain use of Metals in Additive Manufacturing with important process parameters, benefits, drawbacks, Limitations and appropriate applications. **[9]**

b) What are the different types of post processing techniques in AM? Why post processing is necessary in additive manufacturing? **[8]**

P.T.O.

Q5) a) Explain the process and mechanism used in Multi-Jet Modeling (MJM). **[9]**

b) Explain the design considerations of different types of nozzles used in Polymer based 3D Printers. **[8]**

OR

Q6) a) What is calibration of 3D Printer and Explain raw material manipulation in details with suitable examples. **[9]**

b) What are the bio active materials in additive manufacturing state its application. **[8]**

Q7) a) Write short notes on Mass Customization and Future trends in additive manufacturing. **[9]**

b) Explain application of AM in Food-Processing, Food & Consumer Applications with suitable case study. **[9]**

OR

Q8) a) Explain application of AM in Personalized Surgery, Bio-medical Applications with suitable case study. **[9]**

b) Explain with the example of case studies additive manufacturing in aerospace and machine tools. **[9]**