[6354]-622
B.E. (Mechanical)
ADDITIVE MANUFACTURING
(2019 Pattern) (Semester - VII) (Elective - IV) (402045 C)

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 if necessary.*

Q1) a) Explain process Fused Deposition Modeling (FDM) with suitable sketch. List its Benefits, Limitations and Applications. **[9]**

b) Explain process Binder Jetting with suitable sketch. **[9]**

OR

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

b) Explain process Plasma Arc Deposition. List its Benefits, Limitations and Applications. **[9]**

Q3) a) Explain different quality considerations in Additive Manufacturing. **[9]**

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

OR

Q4) a) Write short notes on Surface enhancement Techniques in Additive manufacturing. **[9]**

b) Explain varieties of chemical treatment applied in pre-and post-processing of additive manufacturing based products. **[8]**

Q5) a) What is calibration of 3D Printer and Explain raw material manipulation in details with suitable examples. **[9]**

b) Explain the design considerations of Positioning Devices and Scanners system used in Laser-Based Metal 3D Printers. **[8]**

OR

Q6) a) Explain the process and mechanism used in Multi-Jet modeling (MJM). **[9]**

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

Q7) a) Explain how additive manufacturing is used in Electronics Industries. Also write merits, demerits and practical feasible applications with illustrations. **[9]**

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

OR

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

b) Explain how additive manufacturing is used in Food & Consumer Applications Sector. Also write merits, demerits and practical feasible applications with illustrations. **[9]**

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