ME|SemII|CBCGS|MECH|CAD|CAM/RM|M-J-18 23|05|18

Q.P. Code: 38977

Total Marks- 80 **Duration: 3 Hours**

N.B. 1) Attempt **any four questions.**
2) Figures to the right indicate full marks.
3) Draw neat sketches to support your answer wherever necessary.

Q. 1 a) What is a rapid prototype? Explain the role of prototypes in product design and development process. **10**

b) Explain the process of reverse engineering with rapid prototyping technology with the help of a suitable example. **10**

Q. 2 a) Explain the working principle of stereolithography with the help of a neat sketch. State its applications, merits and demerits. **10**

b) Explain different file formats supported by rapid manufacturing systems. **10**

Q. 3 a) Explain the applications of rapid manufacturing in automobile industry with the help of two case examples. **10**

b) Explain different types of defects observed in STL files with supporting sketches. **10**

Q. 4 a) Explain post-processing and its objectives in rapid manufacturing. What are the various post-processing methods used? **10**

b) Explain the working principle of fused deposition modelling with the help of a neat sketch. State its applications, merits and demerits. **10**

Q. 5 a) Explain the applications of rapid manufacturing in biomedical industry with the help of two case examples. **10**

b) Explain working principal of powder based rapid manufacturing systems. How metals can be printed using this technique? **10**

Q. 6 **Attempt (Any 4)** **20**

a) Comparison of additive, subtractive and formative manufacturing
b) Multiple jet solidification process(MJS)
c) Pros and cons of conventional slicing of STL files
d) Comparison of direct and indirect methods of rapid tooling
e) Resolution and accuracy issues in rapid manufacturing
f) Comparison of Vector scanning with mask projection method in SLA

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