

Code: MEMD1T5C

**I M.Tech - I Semester - Regular Examinations – April, 2015**

**RAPID PROTOTYPING  
(MACHINE DESIGN)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) What are the main roles and functions for prototypes? How do you think rapid prototyping satisfies these roles? 8 M
- b) Briefly discuss about two rapid prototyping systems that are liquid-based. 6 M
2. Define Rapid prototyping and explain the five basic steps involved in RP process chain with a suitable diagram? 14 M
3. a) Describe the process flow of the 3D System Stereolithography Apparatus. 6 M
- b) Discuss the principle behind the two-laser-beam method. What are the major problems in this method? 8 M

4. As opposed to many of the liquid-based RP systems which uses photosensitive polymer, water is used in the Rapid Freeze Prototyping (RFP). What are the pros and cons of using water? 14 M
5. Compare and contrast the laser-based LOMTM process and the FDM systems. What are the advantages and disadvantages for each of the systems? 14 M
6. Explain the shape deposition manufacturing process with a neat schematic diagram and discuss its applications? 14 M
7. Using a sketch to illustrate the Selective Laser Sintering (SLS) process and discuss the materials, model and specifications of the equipment. 14 M
8. Explain about the Optomec's LENS system. What are the advantages and disadvantages of the system? 14 M