

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Total No. of Questions : 08

M.Tech (Mechanical Engineering) (Sem.-3)

RAPID PROTOTYPING

Subject Code : MTME-208

Paper ID : [74984]

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

- Q1 a) What are the fundamentals of Rapid Prototyping? Describe the advantages of Rapid Prototyping in terms of its beneficiaries such as the product designers, marketers and consumers.
- b) What are the main roles and functions for prototypes? How do you think rapid prototyping satisfies these roles?
- Q2 a) Explain geometric modeling technique for Rapid Prototyping and Tool Fabrication.
- b) Discuss the advantages and disadvantages of powder-based RP systems compared with :
- i) Liquid-based RP systems,
 - ii) Solid-based RP systems.
- Q3 a) Explain with a neat sketch, principle of operation of Selective Laser Sintering (SLS) process.
- b) Narrate Laminated Object manufacturing with neat sketch.
- Q4 What is the need for Reverse Engineering in rapid prototyping? Describe various types of CMM configurations used in rapid prototyping applications.
- Q5 a) What is Rapid Tooling and explain about shell investment casting process with its advantages and disadvantages.
- b) Explain how RPT can be used for the production of rapid tooling for aerospace and electronics industries.

- Q6 a) Describe the importance of magics, mimics, solid view, view expert operations in rapid prototyping software.
- b) How would you differentiate between the following types of rapid tooling processes :
- i) Direct soft tooling,
 - ii) Indirect soft tooling,
 - iii) Direct hard tooling,
 - iv) Indirect hard tooling.
- Q7 a) Explain how a RP pattern can be used for vacuum casting with silicon molding. Use appropriate examples to illustrate your answer.
- b) What are the RP systems that are suitable for obtaining RTV tools and ceramic tools?
- Q8 a) Write short note on 'Modelling of material properties' in RP process.
- b) Why and in what circumstances would RP be considered to assist implant fabrication?