Registration No.: | | | | | | | | | | |

Total Number of Pages: 02 **Course: B.Tech**

Sub_Code: RME5D005

5th Semester Regular/Back Examination: 2024-25

SUBJECT: Rapid Manufacturing Processes

BRANCH(S): MECH

Time: 3 Hours

Max Marks: 100

Q.Code: R033

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

Part-I

Q1 **Answer the following questions:** **(2 x 10)**

a) Differentiate between model and prototype.
b) What is “Voxel”?
c) Write down some applications of rapid prototyping technologies.
d) What is meant by STL?
e) Explain the benefits of reverse engineering.
f) Classify the RP processes based on the type of raw material.
g) Which RP technology is a hybrid process between additive and subtractive processes?
h) Differentiate between NC and CNC.
i) What is the need for support generation in RP processes?
j) Write down the advantages of RP.

Part-II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**

a) Briefly explain the errors generated due to data preparation, part building, build orientation, and surface finishing.
b) Explain the fused deposition modeling process.
c) Discuss the laminated object manufacturing process with a neat sketch.
d) Describe the factors that influence the accuracy of RP Processes.
e) Explain the uses of magic software.
f) Explain the need for process optimisation and name any four technologies used for process optimisation.
g) Illustrate the features of CAD-CAM data exchange.
h) Discuss the steps involved in RP.
i) Explain the features of internet-based RP software.
j) What is the importance of rapid tooling?
k) Explain the functions of mimic software.
l) Briefly explain the binder jetting process.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3	Explain the various stages of product development. Discuss the cost involved in each stage of product development.	**(16)**
Q4	Explain the selective laser sintering process with its applications, advantages, limitations, and machine details.	**(16)**
Q5	What is meant by photopolymerisation? Explain the principle of the stereo lithography process with a neat diagram and write down its advantages, limitations, and applications.	**(16)**
Q6	Describe the basic principle of solid ground curing process with a neat sketch, including its applications and machine details.	**(16)**