



Name:

Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2022

Programme Name: B. Tech (Automotive Design Engineering)

Semester : VIII

Course Name : Rapid Prototyping & Tooling

Time : 03 hrs.

Course Code : MEAD4008P

Max. Marks : 100

Nos. of page(s) : 2

Instructions:

- i. Read the instruction carefully before attempting.
- ii. No submission of the Answer Sheet shall be entertained after due time.
- iii. Attempt All Questions. One question from section B and C have an internal Choice.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Describe any 2 design benefits of Rapid Prototyping.	4	CO1
Q 2	Specify the raw materials used in rapid prototyping processes.	4	CO2
Q 3	Write the advantages and disadvantages of stereo lithography.	4	CO3
Q 4	Mention any five applications of 3-Dimensional (3D) Printing.	4	CO3
Q 5	Illustrate the concept of slicing.	4	CO4

SECTION B
(4Qx10M= 40 Marks)

Q 6	Discuss the concept of flexible manufacturing system.	10	CO1
Q 7	Classify rapid prototyping processes.	10	CO1
Q 8	Describe the steps followed in the stereo lithography rapid prototyping process with the help of a neat diagram.	10	CO2
Q 9	Briefly explain the RP processes involving solid sheets. OR Explain the process of rapid freeze prototyping. mentioned the advantages and limitation of rapid freeze prototyping.	10	CO2

SECTION-C

(2Qx20M=40 Marks)

Q 10	(a) Describe the principle of photopolymerization with suitable scheme. (b) Explain the working principle of FDM. Mentioned its advantages and limitations. OR (a) State all the techniques that come under the powder based Rapid Prototyping techniques. (b) Describe in details any two of them with neat and labelled diagrams.	10 + 10	CO3
Q 11	(a) Explain the steps of converting STL file from various CAD files. (b) Identify the errors generates in STL file. (c) Illustrate the concept of internal hatching and surface skin fills.	5+5+10	CO4