

2072
M.E. (Mechanical Engineering)
Second Semester
Elective - II
MME-205(h): Imaging and Additive Manufacturing

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, selecting atleast two questions from each Part.

x-x-x

PART A

I)

- 1) Mention steps followed to remove support material formed in a 3D printed model.
- 2) Demonstrate 2D geometrical transformations for a triangle.

(5,5)

II)

- 1) How are digital images shrunk?
- 2) Differentiate between properties of a sine and cosine transform.

(5,5)

III)

How can digital image processing be used in biomedical imaging techniques? Explain with examples of various body organs

(10)

IV)

What is meant by a transformation matrix? What would be the CAD commands to execute geometric transformations of rotation and reflection?

(10)

PART B

V)

Draw the complete flow diagram with steps from CT scan to final manufactured product obtained by 3D printing or milling process.

(10)

VI)

Explain limitations and benefits of FDM printing over SLA, with examples and figures.

(10)

P.T.O.

(2)

Vii)

Write short notes on any 2 of the following:-

- 1) Surface development of a prism
- 2) Portable 3D scanners
- 3) Post processing finishing methods used in 3D printing

(5,5)

Viii)

- 1) How is a CAD file different from an STL file?
- 2) What is surface modelling in CAD?

(5,5)

x-x-x