Time allowed: 3 Hours   Max. Marks: 50

NOTE: Attempt _five_ questions in all, including Question No. I which is compulsory and selecting two questions from each Part.

x-x-x

Q-1)

1) What are ruled surfaces?

2) What is meant by Perspective Projection?

3) What is the importance of bed temperature in FDM 3D printing?

4) Which powder materials are used in SLS 3D printing?

5) What are primitives?

(5x2=10)

PART A

Q-2)

1) Differentiate between geometric and topology similarity in solid models.

2) How is Boundary Representation(B-Rep) approach helpful in designing solid models?

(5,5)

Q-3)

1) How can trees be used to create solid models?

2) What is meant by open and closed neighborhood?

(5,5)

Q-4)

1) What are the features of dynamic range of an imaging system?

2) Differentiate between sampling and quantization for digital imaging.

(5,5)

PART B

Q-5)

For the matrix below, first apply rotation of 45^0 about y-axis, followed by rotation of 45^0 about x-axis and determine the resultant matrix

$$\begin{matrix} 2 & 0 & 1 & 0 \\ 1 & 3 & 0 & 0 \\ 4 & 0 & 1 & 0 \\ 0 & 3 & 6 & 1 \end{matrix}$$

(10)

P.T.O.

Q-6) A rectangular parallelepiped has its length as 3,2 and 1 unit on x,y,z axis respectively. Perform rotation by 90^0 clockwise about x axis.

(10)

Q-7)
1) What are the best practices for removal of supports from a 3D printed product?
2) How is 3D printing critical in reverse engineering?

(5,5)

x-x-x