Roll No. .....

3339

B. Tech. 6th Semester (CSE) (Elective - II) Examination – May, 2023

COMPUTER GRAPHICS

Paper : PEC-CSE-314-G

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting at least *one* question from each Section. Question No. 1 is ***compulsory***. All questions carry equal marks.

1. Explain the following : $6 \times 2.5 = 15$

   (a) Difference between raster scan and random scan display.

   (b) Various operations that can be applied on image

   (c) Window to view port mapping

P. T. O.

(d) Scaling

(e) Reflection

(f) Importance of removal of ' Hidden Surface'

SECTION – A

2. Explain with diagram the display processor for a random and vector scan display device. 15

3. (a) Write and explain boundary fill algorithms. 8

   (b) How Bresenhman's algorithms can be used for generating circle ? Explain. 7

SECTION – B

4. Explain two-dimensional transformation matrix for translation, scaling and rotation. 15

5. Contrast the efficiency of clipping between Sutherland-Cohen and Mid-point algorithm. Describe Sutherland-Hodgeman algorithm for polygon clipping. Explain why this algorithm works for convex polygons. 15

SECTION – C

6. Explain the following terms : 15

   (i) Z- buffer algorithm

(ii) Scanline algorithm

(iii) Sub-division algorithm

7. (a) Write a 3D transformation matrix to find reflection of a point P(25, 35, 45) about plane $Z = 0$. 8

(b) What is Oblique projection ? Provide some examples of oblique projection. 7

SECTION – D

8. (a) What is an image ? How quality of an image can be improved with filtering ? 7

(b) Describe methods of polygon shading. 8

9. Discuss interpolation method for curve generation. Also discuss about parametric representation of surface. 15
