Roll No. ....

24253

B. Tech. (5th Semester) (Information Technology) Examination – December, 2011

COMPUTER GRAPHICS

Paper : CSE - 303 - F

Time : Three hours]   [Maximum Marks : 100

Before answering the question, 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 with atleast *one* question from each Section and Question No. **1** is *compulsory*.

1. (a) What is graphic input device ?   3

    (b) Explain the principle of light pen.   3

    (c) Define Homogeneous Co-ordinate system.   3

    (d) What is windowing ?   4

    (e) How to fill an 8-connected region ?   3

    (f) What is an image ? Describe.   4

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SECTION – A

2. (a) Distinguish between Raster and vector graphics methods. When do we prefer what ? **10**

    (b) Describe boundary fill algorithm for polygon with suitable example ? **10**

3. How Bressenham's algorithm can be used for generating circle ? What is the advantage of the method compared to other ? **20**

SECTION – B

4. (a) Distinguish between window port and view port. In 2D clipping how are lines grouped into visible, invisible and partially visible categories ? **10**

    (b) Give a 3 × 3 homogeneous matrix to rotate the image clockwise by 90 degrees. Then Shift the image to the right by 10 units. Finally scale the image by twice as large. All these transformations are to be done one after another in sequence. **10**

5. Describe various line clipping algorithms with example. **20**

SECTION – C

6. (a) A cube is placed at the origin of 3D system. Such that all its vertices have positive coordinate values and sides are parallel to the three principal axes. Indicate a convenient position of a viewer at

which he can see a 2-point perspective projection. Verify that such a view is generated. **10**

(b) What do you mean by projection ? Describe different types of projections with example. **10**

7. What is 3D graphics ? How can it be possible to show a 3D picture on a display device ? **10**

SECTION – D

8. (a) Diffetiate between Bezier and B-Splines curves. **10**

(b) Explain Shading model for polygons. **10**

9. Write short notes on :

(a) B-Spline curves **10**

(b) Illumination Models **10**

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