

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BEX, BCT	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

**Subject: - Computer Graphics (EX603)**

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What do you understand by raster display technology? Suppose a RGB raster system is to be designed using an 8 inch by 10 inch screen with a resolution of 100 pixels per inch in each direction. How long would it take to load this raster system in frame buffer with 24 bits per pixel, if  $10^5$  bits can be transferred per second? [6]
2. How decision parameters can be used to draw circle? Calculate the points to draw a circle having radius 5 and center as (10, 5). [4+6]
3. Explain Sutherland-Cohen clipping algorithm with an example. [8]
4. Find the coordinate at  $U = 0.25$ ,  $U = 0.5$ , and  $U = 0.75$  with respect to the control points (2, 10), (6, 20), (12, 5) and (16, 15) using Bezier function. And plot Bezier curve with your calculated coordinates. [6+2]
5. Describe 3-D viewing pipelining. Derive the transformation matrix for prespective projection. [6+6]
6. How the geometric and attribute information of a 3-D objects are stored for the object representation? Explain with examples. [5]
7. What are the consideration factors to choose the Visible Surface Detection Algorithm? What are the two classes of visible surface detection techniques, explain? What is limitation of Z-Buffer method? How does A-Buffer method overcome it, Explain? [12]
8. Develop a phong illumination model. Show how this model is used for rendering by deriving of expression for phong shading. [6+8]
9. Explain callback function with example in OpenGL. [5]

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