

Bachelor Level / Second Year/ Third Semester/ Science  
**Computer Science and Information Technology (CSC 214)**  
(Computer Graphics)

Full Marks: 60  
Pass Marks: 24  
Time: 3 hours.

**(NEW COURSE)**

Candidates are required to give their answers in their own words as far as practicable.  
The figures in the margin indicate full marks.

Section A

[2×10=20]

Attempt any TWO questions.

1. Derive the expression for Bresenham's Line Drawing algorithm. Trace the points in the line path with starting point (6, 12) and end point (10, -5) using Bresenham's line drawing algorithm. [5 + 5]
2. What is the major drawback of Sutherland Hodgeman Polygon Clipping Algorithm? Illustrate with suitable example. Explain B-spline curve and its properties. [5 + 5]
3. Explain RGB color model. Differentiate between virtual reality and augmented reality with examples. Explain Binary Space Partitioning (BSP) trees with suitable example. [3 + 3 + 4]

Section B

[8×5 = 40]

Attempt any EIGHT questions.

4. What do you mean by refresh rate of a display device? Explain vector scan display with suitable diagram. [1 + 4]
5. Plot the first octant of a circle centered at (-2, -2), having radius 5 units using mid-point circle algorithm. [5]
6. Given a triangle with vertices A(2,3), B(5,5), C(4,3) by rotating 90 degree about the origin and then translating two unit in each direction. Use homogenous transformation matrix to find the new vertices of the triangle. [5]
7. Construct the Bezier curve with the following polygon vertices (control points): A(1,1), B(2,3), C(4,3), and D(6,4). [5]
8. Compare Scanline Method for Visible Surface Detection with Depth Buffer Method. [5]
9. Explain any two functions in OpenGL. Write the basic commands to draw the pixel and polygon in OpenGL. [2+3]
10. Differentiate between parallel projection and Perspective projections. [1+4]
11. Describe about any two basic illumination models. [5]
12. Write short notes on : [2.5+2.5]
  - a) Sweep Representation
  - b) Intensity Attenuation