

**END TERM EXAMINATION****FIFTH SEMESTER [BCA] NOVEMBER-DECEMBER 2018****Paper Code: BCA-303****Subject: Computer Graphics****Time: 3 Hours****Maximum Marks: 75**

**Note: Attempt five questions in all including Q no.1 which is compulsory.  
Select one question from each unit.**

Q1 Answer the following questions:- (2.5x10=25)

- (a) Explain eight-way symmetry of circle.
- (b) What is anti-aliasing?
- (c) What is the role of video controller in raster scan system?
- (d) What are the coordinates of the point P (2, -4) after rotating by 30° about the origin?
- (e) Explain the working of color CRT.
- (f) Define Homogeneous coordinate system.
- (g) Differentiate between Orthographic and Oblique projection.
- (h) Briefly explain the concept of Polygon meshes.
- (i) What is primitive instancing?
- (j) Differentiate between 2D clipping and 3D clipping.

**UNIT-I**

- Q2 (a) Describe Bresenham's line drawing algorithm with its derivation. (6.5)  
(b) Using Mid-Point circle algorithm draw a quadrant of circle of radius 7 with center (0, 0). (6)
- Q3 (a) Let R be rectangular window whose lower left-hand corner is at L(-3,1) and upper-right hand corner is at R(2,6). Clip line segment AB with endpoints A(-4,2) and B(-1,7) using Cohn-sutherland algorithm. (6.5)  
(b) Explain conceptual framework for interactive graphics. (6)

**UNIT-II**

- Q4 (a) Perform a 45° rotation of triangle A(0,0), B(1,1), C(5,2) about P(-1,1). (6.5)  
(b) Explain window-to-viewport transformation. (6)
- Q5 (a) Prove that two successive 2D scaling are multiplicative in nature, i.e., (7.5)  

$$S(S_{x1}, S_{y1})S(S_{x2}, S_{y2}) = S(S_{x1}, S_{x2}, S_{y1}, S_{y2})$$
(b) Explain matrix representation of 3D transformations. (5)

**UNIT-III**

- Q6 Explain the following:- (12.5)  
(a) Boundary representation  
(b) Spatial partitioning  
(c) CSG  
(d) Sweep representation
- Q7 (a) State the properties of Beizer curves. Find all blending function for Beizer curve (n=3). (6.5)  
(b) Describe B-Spline in detail and identify the differences between b-spline and Beizer curve. (6)

**UNIT-IV**

- Q8 (a) What do you understand by hidden surface removal. Explain Painter's algorithm. (6.5)  
(b) Explain various types of parallel projection. (6)
- Q9 (a) Explain various types of perspective projections. (6.5)  
(b) Explain Z-buffer method for hidden surface removal. (6)

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