

END TERM EXAMINATION

FIFTH SEMESTER [BCA] DEC. - 2019

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:- (5x5=25)
- a) What steps are required to scan convert a circle using Bresenham's algorithm?
 - b) Briefly explain the functions of Random scan display processor.
 - c) Explain matrix representation for 2-D transformations.
 - d) Write short notes on:
 - i) Polygon Mesh
 - ii) Constructive Solid Geometry
 - e) Explain the following:
 - i) Vanishing point
 - ii) Cavalier projection

UNIT I

- Q2 a) Discuss the advantages of interactive graphics. Briefly explain conceptual framework for interactive graphics. (7.5)
- b) Differentiate between Random scan and Raster Scan System. (5)
- Q3 a) Indicate which raster location would be chosen by Bresenham's algorithm when scan converting a line from screen co-ordinates (1,1) to screen co-ordinates (8,5). (7.5)
- b) Discuss the side effects of scan conversion. (5)

UNIT II

- Q4 a) Magnify the triangle with vertices A (0,0), B(1,1) and C(5,2) to twice its size while keeping C (5,2) fixed. (7.5)
- b) What do you mean by shearing? Explain with the help of matrix. (5)
- Q5 a) Derive the transformation that rotates an object point θ° about the origin. (7.5)
- (i) Find the matrix representation for rotation of an object by 30° about origin.
- (ii) What are the new co-ordinates of the point P (2, -4) after the rotation.
- b) Explain window to view-port transformation. (5)

UNIT III

- Q6 a) Find the geometric matrix, basis matrix and blending function for parametric cubic curves (Hermite curve). (7.5)
- b) What do you mean by Geometric continuity? How it is different from parametric continuity? (5)

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- Q7 a) How solids should be represented in Computer Graphics? Give a comparative analysis of all the representations? (7.5)
- b) Explain the following:
- (i) Sweep Representation
 - (ii) Primitive Instancing (5)

UNIT IV

- Q8 a) Briefly explain z-buffer method for hidden surface removal with example. (7.5)
- b) How perspective projection is different from parallel projection? (5)
- Q9 a) Explain depth sorting method of hidden surface removal. (7.5)
- b) Differentiate between orthographic and oblique projections? (5)
