(Please write your Exam Roll No.)

Exam Roll No. .....

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 choosen 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 verticles 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^0 about the origin. (7.5)

(i) Find the matrix representation for rotation of an object by 30^0 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)

P.T.O.

Q7 a) How solids should be represented in Computer Graphics? Give a comparative analysis of all the representations? **(7.5)**

b) Explain the following: **(5)**
(i) Sweep Representation (ii) Primitive Instancing

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)**

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