(Please write your Exam Roll No.) *Exam Roll No. .....*

END TERM EXAMINATION

FIFTH SEMESTER [BCA] DECEMBER 2025

Paper Code: BCA-303 ***Subject: Computer Graphics***

Time: 3 Hours ***Maximum Marks: 60***

Note: Attempt all questions as directed. Internal choice is indicated.

Q1 Attempt **any four** of the following questions: **(4x5=20)**

(a) Discuss the disadvantages of Digital Differential Analyzer algorithm for scan converting line.

(b) Differentiate between Raster and Random scan display.

(c) Consider two different raster system with resolution of 640 x 480 and 2560 x 2048.
Find the size of frame buffer (in bytes) for each of these system to store 24 bits per pixel?

(d) What is video controller. Explain the working of a video controller.

(e) Discuss characteristics of Bezier curve. Explain Convex hull in detail.

(f) What do you understand by parametric continuity? How is it different from geometric continuity, explain?

(g) Write down matrix equation of 3D Rotation and Scaling with homogeneous coordinate.

(h) Write a short note on Aliasing and Antialiasing.

Q2 (a) Explain Bresenham Line Drawing Algorithm with its derivation.
(b) Explain different application areas of Computer Graphics. **(10)**

OR

Q3 (a) Find out all valid coordinates from (12,21) to (17,25) using Bresenham Line Drawing Algorithm.
(b) What is eight-point symmetry of a circle. Explain with the help of example. **(10)**

Q4 What do mean by Clipping. Explain Cohen Sutherland Line Clipping Algorithm with the help of suitable example. **(10)**

OR

Q5 Explain Composite Transformation. **(10)**

Perform 90^0 counter clockwise rotation of a triangle with vertices A(0,0), B(5,1) and C(3,5) by keeping C(3,5) fixed.

Q6 Given a Bezier curve with 4 control points – $P_0(1,1)$, $P_1(3,5)$,$P_2(6,4)$,$P_3(8,2)$. Find 5 points lying on the curve and draw a rough sketch of the curve for (U = 0, 0.25, 0.50, 0.75, 1). **(10)**

OR

Q7 (a) Write notes on: **(10)**
(i) Hermite curve
(ii) Spline Curve
(b) Distinguish between Gourard shading and Phong shading.

Q8 Give any five difference between Parallel and Perspective projection. **(10)**

OR

Q9 Write notes on: **(10)**
(a) Painter's Algorithm
(b) Orthographic projection
(c) Z- buffer
(d) Perspective projection

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CamScanner