

S.E. (Comps) (Sem-III) CBCGS (R-20-21) (CScheme)

(Time: 3 Hours)

Marks: 80

- N.B: 1) Question **number 1** is compulsory.
 2) Attempt **any three** out of the remaining.
 3) Assume suitable data if **necessary** and justify the assumptions.
 4) Figures to the **right** indicate full marks.

Q 1

- A What is computer graphics and discuss its representative uses [5]
 B Explain traditional animation techniques [5]
 C Describe homogeneous coordinate system [5]
 D Explain point clipping method with suitable example [5]

Q 2

- A Given a triangle ABC with coordinates A (0, 0), B (10, 0), C(0,10). Apply [10]
 following transformations in sequence
 i. Translate the triangle by translation parameters (20, 30) units.
 ii. Rotate the triangle by 90° .

Find the new coordinates of the triangle.

- B Explain Cohen Sutherland line clipping method with suitable example [10]

Q 3

- A Derive midpoint ellipse drawing algorithm with suitable diagrams [10]
 B Discuss principles of animation. [10]

Q 4

- A What is window and viewport. Derive the transformation matrix for a window-to-viewport transformation [10]
 B Explain and write matrices for 3D rotation about X, Y and Z axes. [10]

Q 5

- A What is aliasing effect? Explain antialiasing techniques [10]
 B Calculate all the points on the line from point A(0,0) to point B(8,10) using DDA line drawing method. [10]

Q 6

- A Derive the 2D transformation matrix for scaling with respect to fix point. [10]
 B Explain depth buffer method with suitable diagrams [10]
