Reg. No ..... Name **26U610**

B.Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2026

SEMESTER 6 : COMPUTER APPLICATION

COURSE : **19U6CRCAP11 : COMPUTER GRAPHICS**

(For Regular 2023 Admission and Supplementary 2022/2021/2020/2019 Admissions)

Time : Three Hours Max. Marks: 75

PART A

Answer All (1 mark each)

1. List the different ways of representing wireframe models.
2. Which is the most commonly used boundary representation for a 3D graphic object?
3. Write the 3D translation vector.
4. What do you mean by Computer Graphics?
5. List any two line drawing algorithms.
6. Explain viewing coordinates.
7. Which color represents (0,0,1) in RGB color model?
8. What is additive modeling?
9. Define the transformed coordinates of 2D scaling.
10. Name the two methods by which an electron beam can be bent in CRT.

(1 x 10 = 10)

PART B

Answer any 8 (2 marks each)

11. What are the advantages and disadvantages of wireframe models?
12. What is the importance of projection in 3D viewing?
13. Explain scan converting a rectangle.
14. Represent window to viewport mapping equation.
15. How image is represented in computer graphics?
16. Discuss Anti-Aliasing.
17. List the basic functions of depth-sorting methods.
18. Explain 3D scaling.
19. Explain Color Display monitor.
20. Write the matrix representation of 2D rotation.

(2 x 8 = 16)

PART C

Answer any 5 (5 marks each)

21. Explain 2D viewing pipeline.
22. Write the 3D scaling matrix with respect to a fixed point(xf,yf,zf).
23. Which are the steps involved in window to viewport co-ordinate transformation in 3D?
24. Explain DDA Line drawing algorithm.
25. Given a clipping window A(-20,-20), B(40,-20), C(40,30) and D(-20,30).Using Cohen-sutherland line clipping algorithm, find the visible portion of the line segment joining the points P(-30, 20) and Q(60,-10)

26. "A typical image file mainly consists of header and image data".Describe.

27. List out the differences between z-buffer method and A-buffer method for determining the visible surfaces.

(5 x 5 = 25)

PART D

Answer any 2 (12 marks each)

28. Prove that the multiplication of 3D transformation matrices for each of the following sequence of operation is commutative.
    a) Any two successive translation.
    b) Any two scaling operation.
    c) Any two successive rotation about any one of the co-ordinate axes

29. Explain visible surface detection methods with neat diagram.

30. List all types of clipping and explain any three in detail with examples.

31. Given a triangle A(20,10),B(80,20),C(50,70)
    Find the co-ordinate of vertices after each of the following transformation.
    a) Reflection about the line x=y
    b) Rotation of the traingle ABC about vertex A in clockwise direction for an angle 90°
    c) Shear about x axis.

(12 x 2 = 24)