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**MCADD-504**

**M.C.A. (Integrated), V Semester**

**Examination, November 2023**

**Computer Graphics**

**Time : Three Hours**

**Maximum Marks : 70**

**Note:** i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Describe the major application areas of computer graphics. 7

b) Write in brief about various interactive input devices. 7

2. a) Write a procedure for thick line using Bresenham's algorithm. 7

b) Write mid point circle generation algorithm and by using it find the points needed to generate quarter part of circle

$$(x+2)^2 + (y-1)^2 = 16 \quad 7$$

3. a) What are the different graphics primitives? Explain them with examples. 7

b) What do you mean by Projection? Discuss principal vanishing points for the standard perspective transformation. 7



4. a) Show that the rotation about the origin can be done by performing three shearing transformations. 7  
 b) Describe the following colour models in brief 7  
 i) CMY  
 ii) YIQ
5. a) What is the importance of normalized device co-ordinate system? Derive window to view port transformation. 7  
 b) Using Cohen-Sutherland out code algorithm clip two lines  $P_1(70, 20) - P_2(100, 10)$  against a window  $a(50, 10), C(80, 40)$ . 7
6. a) Find equation of Bezier curve defined by the control points (2,1), (3,2), (5,0) and (6,2). Draw the curve and find its mid points. 7  
 b) Distinguish between parallel and perspective projection describe how a 3-dimensional object is presented in 2-dimensional screen using different types of parallel projections. 7
7. a) What two steps are required to determine whether any given points  $P_1(x_1, y_1, z_1)$  obscure another point  $P_2(x_2, y_2, z_2)$ . 7  
 b) How the size of frame buffer pixel and resolution are related to each other? 7
8. Write in brief about the following: 14  
 i) Derive the basis matrix for Hermite Curve.  
 ii) Derive the basis matrix for Bezier Curve.

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