

Unique Paper Code : 32341602  
Name of the Course : BSc (H) Computer Science  
Name of the Paper : Computer Graphics  
Semester : VI  
Year of Admission : 2015, 2016, 2017  
Duration : 2 Hours  
Maximum Marks : 75

**INSTRUCTION:**

Attempt any **Four** Questions out of **Six**. All Question Carry Equal Marks.

1. Describe the functioning of a plasma display panel which does not require any refreshing, gives very stable image at the output panel and allows erasing and writing selectively at some finite speed about 21.5 microsecond per unit cell.
2. A dashed line joining two points  $P(x_1, y_1)$  and  $Q(x_2, y_2)$  has to be plotted. Describe an algorithm to draw a dashed line for joining the points  $P(x_1, y_1)$  and  $Q(x_2, y_2)$ . The length of dash is  $p$  pixels and length of gap between two dash is  $q$  pixels.
3. Find a transformation matrix of a triangle having co-ordinates  $A(2, 0)$ ,  $B(0, 2)$ ,  $C(1, 1)$  which is rotated an angle  $\theta$  in anticlockwise direction about the origin. Also give the transformation matrix when rotation by an angle  $\theta$  is done about an arbitrary point  $P(h, k)$  and then translating by two units in each of  $x$  and  $y$  directions.
4. From the standard perspective projection point of view, what is the projected image of
  - the point  $P(p, q, r)$  on to the plane  $z = k_z$ , assume own center of projection.
  - the line segment joining  $P(2, -2, -6k_z)$  to  $Q(6, 2, 0)$  in the plane  $z = k_z$ .
5. The two curves are given as  $z(t) = (t^2 + 2t - 2, t^2)$  and  $r(t) = (t^2 + 2t + 1, t + 1)$ . Show that these two curves are both  $C^0$  and  $G^0$  continuous when they meet at  $z(1) = r(0)$ . Do these curves satisfy  $C^1$  and  $G^1$  continuity? Justify your answer.
6. Construct a Bezier curve of order **three** using four control points which are the corners of the polygon defined by  $A(2, 2)$ ,  $B(3, 4)$ ,  $C(5, 4)$  and  $D(7, 5)$ . Find the co-ordinates for  $t = 0.1, 0.4, 0.6, 0.8$ .

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