

**DipIETE – CS**

Time: 3 Hours

**DECEMBER 2012**

Max. Marks: 100

**PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.**

**NOTE: There are 9 Questions in all.**

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

**Q.1 Choose the correct or the best alternative in the following: (2×10)**

- a. Which of the following is correct about MPEG?
- (A) It is an image format                      (B) It is an audio format  
(C) It is a video format                      (D) It is text format
- b. The general representation  $(2 - 6t, 4 + 3t)$  for  $0 \leq t \leq 1$ , in parametric representation, represents
- (A) a line with end points (2, -4) and (-6, 3)  
(B) a curve between end points (2, 4) and (-6, 3)  
(C) a line with end points (2, 4) and (-4, 7)  
(D) not a line but a circle with centre at (2, 4).
- c. If a square having side of length k is to be transformed into rhombus then it can be done by
- (A) first shear along x axis then along y-axis  
(B) first shear along y axis then along x-axis  
(C) Either (A) or (B)  
(D) None of these
- d. Visible point is assigned the following bit-code in the Cohen Sutherland clipping algorithm
- (A) 0000                      (B) 1001  
(C) 0110                      (D) 1111
- e. Affine transformation retains which of the following features
- (A) Shape                      (B) Angle  
(C) Length                      (D) Parallelism of lines

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- f. How many control points are essentially present in a quadratic blending Bezier curve?
- (A) 5 (B) 4  
(C) 2 (D) 3
- g. In Z-buffer algorithm, which of the following initialization is performed?
- (A) Depth(x, y) = 0, refresh (x, y) = Intensity (Background)  
(B) Depth(x, z) = 0, refresh (x, z) = Intensity (Background)  
(C) Depth(y, z) = 0, refresh (y, z) = Intensity (Background)  
(D) Depth(x, y) =  $Z_{\max}$ , refresh (x, y) = Intensity (Foreground)
- h. Which of the following algorithm is not used for removal of hidden surface?
- (A) Back Face Removal (B) Z-Buffer  
(C) Depth-Buffer (D) Cyrus-Beck
- i. A point (2, 3) is rotated anti clockwise around origin by an angle  $90^\circ$ . The final point is then
- (A) (3, 2) (B) (-3, 2)  
(C) (2, -3) (D) (-2, -3)
- j. Which of the following is not a video format?
- (A) NTSC format (B) PAL format  
(C) GBR format (D) SECAM format

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**Answer any FIVE Questions out of EIGHT Questions.**  
**Each question carries 16 marks.**

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- Q.2** a. How Interactive graphics system is more useful than non-interactive graphics system? (7)
- b. Give very brief description of (9)  
(i) Input Devices  
(ii) GUI  
(iii) Tablet
- Q.3** a. Write an algorithm to draw a circle centred at (2, 3) and of radius 5. (8)
- b. Discuss scan line seed free algorithm using suitable example. (8)
- Q.4** a. Find the new points when the point (3, 4) is rotated by an angle of  $45^\circ$  anticlockwise and then translating the resultant point by 2 unit along x-axis and 5 units along y-axis. (8)

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- b. Explain homogeneous co-ordinate system. Why is it required to be considered while transforming an object from one reference frame to other reference frame? (8)
- Q.5** a. Write the Sutherland Hodgman Clipping algorithm and clip a line segment between points (4, 3) to (5, 7) so that it fits into view port with left bottom at (4,4) and right top at (5, 7). (8)
- b. Determine a transformation matrix to view a digital object of extent (1, 1) to (20, 20) on display area of width = 15 and height = 10 starting from (0, 0). Unit of measurement is same for both object and display area. (8)
- Q.6** a. Compute the transformation matrix that is required to project a polygon with vertices at (1, 4, 5), (3, 2, 4) and (2, 9, 7) onto x-z plane viewing along y-axis. (8)
- b. Differentiate between spline and curve. Define a cubic Bezier curve and give the formula to compute its control points. (8)
- Q.7** a. Write the z-buffer algorithm to detect visible surface. If the colour of the projection surface is same as that of visible surface, then how the surface will be made visible? (8)
- b. Can lines behind any face be hidden completely or be drawn with different attributes? Discuss. Also describe briefly “direct Method” and “Visible Surface Detection Method”. (8)
- Q.8** a. What is animation? What are the different methods to produce real time animation? (8)
- b. Define the term morphing and explain basic restrictions imposed on the number of features required to be maintained on two consecutive frames. (8)
- Q.9** a. Write short notes on:  
(i) BMP File Format.  
(ii) PCX File Format. (8)
- b. Briefly explain use of audio, visual and text elements in multimedia. How are they stored? (8)