

DipIETE – CS (Current Scheme)

Time: 3 Hours

DEEMBER 2015

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. How many memory bits will be present in the single bit plane of 512×512 elements square raster?

(A) 2^9	(B) 2^{18}
(C) 2^{512}	(D) 2^0
- b. In D×F Files, which section contains non graphical parts of the drawing?

(A) TABLES	(B) CLASSES
(C) OBJECT	(D) EOF
- c. The homogeneous co-ordinate for (4,2) is

(A) (6, 4, 2)	(B) (12, 6, 3)
(C) (8, 1, 2)	(D) None of these
- d. In 2D scaling of an object, what happens to the object, if the value of two independent factors S_x and S_y are equal?

(A) It simply changes object size	(B) The object is elongated along X-Axis
(C) The object will shrink along X-Axis	(D) The object size is not changed
- e. Which polygon clipping algorithm uses any polygon against convex polygon?

(A) Cohen-Sutherland Algorithm	(B) Sutherland Hodgman Algorithm
(C) Liang-Barsky Algorithm	(D) None of these
- f. In plane geometric projection classification, which of the following are classified under parallel projection?

(A) Orthographic	(B) Isometric
(C) One point	(D) Both (A) & (B)
- g. Which among the following is not a hidden surface removal algorithm?

(A) Back face detection method	(B) Depth buffer method
(C) Z-Buffer method	(D) None of these
- h. The degree of Bezier curve is _____ than the control points.

(A) one more	(B) one less
(C) two more	(D) two less

Code: DC66**Subject: COMPUTER GRAPHICS**

- i. Frame by Frame sequence or ordering of the clips of the complete project which defines the series of actions is called
 (A) Timeline (B) Story board
 (C) Animation (D) None of these
- j. The resolution of NTSC video format is
 (A) 648×486 (B) 720×576
 (C) 768×576 (D) 400×800

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

- Q.2** a. List out the four uses of computer graphics. (2)
 b. With a neat diagram. Explain graphics system configuration. (8)
 c. Explain the essential components of GUI. (6)
- Q.3** a. Write the algorithm for raster display of a line using Bresenham's Algorithm. (8)
 b. Explain scan line seed fill algorithm for filling a polygon with a single color. (6)
 c. What is aliasing & antialiasing? (2)
- Q.4** a. Derive the Transformation matrix in 2D for: (2x2)
 (i) Shearing about x axis
 (ii) Reflection about y axis
 b. Give the transformation matrix for reflection of a point along the line $y = mx + c$. (6)
 c. Explain the steps required to rotate an object in 3D about an arbitrary point. (6)
- Q.5** a. Explain the Barsky 2D line clipping algorithm. (8)
 b. Explain the steps involved in 2D viewing transformation. (8)
- Q.6** a. Define Perspective and Parallel projections. What is the main difference between them? (4)
 b. Derive the transformation matrix for the projection of a point (x, y, z) onto the plane $z = 0$ with centre of projection at $(0, 0, -z_c)$. (8)
 c. What do you mean by vanishing points? What are different types of vanishing points? (4)
- Q.7** a. Explain back face detection method of hidden surface removal. (10)
 b. Explain the following w.r.t. hidden line removal (6)
 (i) Direct method
 (ii) Using visible surface detection methods
- Q.8** a. Briefly explain any two different devices used for producing animation. (8)
 b. Explain different video formats. (8)
- Q.9** a. Explain BMP file format. (10)
 b. Explain compact disk and digital versatile disk. (6)