DipIETE – CS (NEW SCHEME) – Code: DC66

Subject: COMPUTER GRAPHICS

Time: 3 Hours

DECEMBER 2011

Max. Marks: 100

NOTE: There are 9 Questions in all.

• **Please write your Roll No. at the space provided on each page immediately after receiving the Question Paper.**

• **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. By generating only _____ of a circle, the rest of the points of the circle can be generated using symmetry

   (A) 3 quadrants   **(B)** 2 quadrants
   (C) 1 quadrants   **(D)** All the 4 quadrants have to be generated

b. Time between two consecutive refreshes of CRT depend upon

   (A) Size of graphics image   **(B)** Size of Screen
   (C) Frame buffer size   **(D)** Persistence factor of phosphor

c. In a screen with aspect ratio of 4:3, if 1280 pixels are along horizontal line then number of pixels along vertical line is

   (A) 960   **(B)** 800
   (C) 1020   **(D)** 980

d. If a point (3, 6) is translated using value tx = 3 and ty = –7, then the new point is

   (A) (6, -1)   **(B)** (6, 13)
   (C) (0, 13)   **(D)** (0, 1)

e. Which of the following is a type of projection?

   (A) Trimetric   **(B)** Isometric
   (C) Diametric   **(D)** Tetrametric

f. Which of the following region code is not valid in Cohen Sutherland clipping algorithm?

   (A) 1010   **(B)** 0000
   (C) 1001   **(D)** 1111

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g. Which of the following format is used for storing images only?

(A) PCX   **(B)** MP3
(C) AVI   **(D)** WM V

h. Shearing in computer graphics is a type of

(A) Projection   **(B)** Transformation
(C) Shading   **(D)** Clipping

i. Which of the following is not an input device?

(A) Light pen   **(B)** Optical mouse
(C) Digitizer   **(D)** None of the above

j. The following algorithm is not used for removal of hidden surface

(A) Back Face removal Algorithm   **(B)** Z-Buffer Algorithm
(C) Cyrus Beck Algorithm   **(D)** Depth Buffer Algorithm

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

Q.2 a. Write a short notes on video adapter/controller. **(8)**

     b. Explain the components of graphic systems configuration with the help of a diagram. **(8)**

Q.3 a. Find the points to be selected to draw a line using DDA algorithm between points (3, 5) and (10, 10). **(8)**

     b. Explain Seed Fill algorithm for polygon filling with a suitable example. **(8)**

Q.4 a. Compute the transformation matrix required to translate a point (x,y) by distance 3 and 4 along x and y axis respectively and then rotate (x,y) anti clockwise by $45°$. **(8)**

     b. Explain the concept of homogeneous coordinate system and its application. **(8)**

Q.5 a. Clip a line segment between points (1,3) to (5,17) using Cohen Sutherland clipping algorithm so that it fit into view port with left bottom at (3,5) and right top at (8,12). **(8)**

     b. Explain the steps required in viewing transformation to map world coordinate scene to device coordinates. **(8)**

Q.6 a. Find a rotation matrix to rotate the point (1,2,3) by $45°$ around origin in y-z plane. Find transformed value of the point also. **(8)**

b. Define oblique projection and then find the transformation matrix for the projection of a point (x, y, z) in x-y plane. **(8)**

Q.7 a. Describe a technique used to draw only visible portion of an image. What factors are considered while selecting the visible portion of an image? **(8)**

b. Describe the algorithm for hidden line removal. **(8)**

Q.8 a. What are the devices required for producing animation? Describe in brief the steps required to produce real time animation. **(8)**

b. Define the term morphing and explain its use in key frame systems of animation. **(8)**

Q.9 Write short notes on the following:

(i) MPC specification
(ii) BMP file format
(iii) WAV file format
(iv) Compact Disk **(4×4)**