Code: DC66   **Subject: COMPUTER GRAPHICS**

DipIETE – CS

Time: 3 Hours   **JUNE 2013**   **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. Light pen is a:

    (A) input device   **(B)** output device
    (C) memory device   **(D)** plotting device

b. The portion of memory used to hold pixels is called:

    (A) flash memory   **(B)** frame buffer
    (C) random access memory   **(D)** ROM

c. DDA algorithm is used to

    (A) draw a rectangle   **(B)** draw a circle
    (C) draw a polygon   **(D)** draw a line

d.   Region filling is the process of .... a definite image area of region

    (A) colouring in   **(B)** preparing
    (C) selecting   **(D)** removing

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

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

f. Which of the following is not part of the 2D transformation?

    (A) Clipping   **(B)** Translation
    (C) Sealing   **(D)** Rotation

---

g. To increase or reduce the size of image, ... transformation is used:

   (A) rotation   **(B)** translation
   (C) scaling   **(D)** reflection

h. When two or more transformation are carried out together then it is called

   (A) concluding transformation   **(B)** composite transformation
   (C) arbitrary transformation   **(D)** matrix transformation

i. If the line is entirely within the window then both points will have out-codes

   (A) 0100   **(B)** 0000
   (C) 1111   **(D)** 1010

j. Sutherland – Hodgeman algorithm is used for:

   (A) polygon clipping   **(B)** graphical representation
   (C) 3D modelling   **(D)** none of these

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

Q.2 a. Write various uses of computer graphics.   **(8)**

   b. Consider a raster system with resolution of 640 x 480.What size of frame buffer
       (in bytes) is needed to store 12 bits per pixel.   **(8)**

Q.3 a. Distinguish between seed filling and scan line-filling algorithm. Apply any of
             these algorithms to fill the polygon defined by (1, 1), (1, 5) and (5, 2).   **(8)**

   b. Digitize a line from (1, 2) to (12, 18) on a raster screen using Bresenham's
       straight line algorithm.   **(8)**

Q.4 a. Explain 2D transformation for scaling and rotation transformation. Use suitable
             example.   **(8)**

   b. What are the new coordinates of the point P(2, -4) after the rotation by 30
       degrees.   **(8)**

Q.5 a. Explain Cohen-Sutherland line clipping algorithm. Use a suitable example.**(8)**

   b. Use Sutherland-Hodgman algorithm for line clipping to clip a line [(0, 0), (10,
       10)] against rotated window shown in figure.   **(8)**

Window
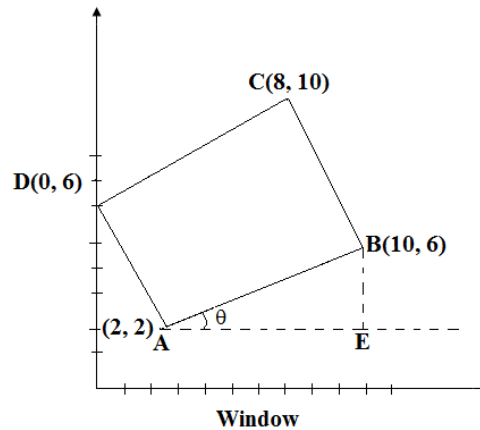
Q.6 a. Describe the use of Bezier curves and its working principle used in computer graphics.   **(8)**

      b. What do you understand by oblique parallel projections? How it is different from perspective projection?   **(8)**

Q.7 a. Explain the method of back face detection with the help of example.   **(8)**

      b. Differentiate between the object space method and image space method of detecting visible surface.   **(8)**

Q.8 a. What are the real time animation techniques?   **(8)**

      b. Explain the method of frame by frame animation technique for expert animator.   **(8)**

Q.9 a. What are the various components of multimedia? How do they affect human perception and understanding?   **(8)**

      b. How can you make better use of multimedia in education and training?   **(8)**