ROLL NO. _____

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)**

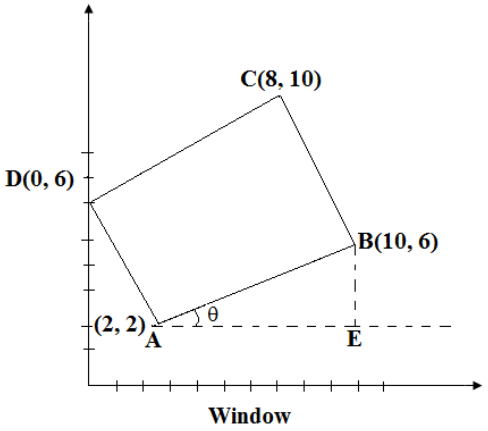
b. Digitize a line from (1, 2) to (12, 18) on a raster screen using Bresenham's straight line algorithm. **(8)**

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)**



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)**