

AMIETE – CS/IT (NEW SCHEME)

Time: 3 Hours

JUNE 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. Pixel is

- (A) the smallest addressable point on the screen
- (B) an input device
- (C) a memory block
- (D) a data structure

b. Aliasing means

- (A) Rendering effect
- (B) Shading effect
- (C) Staircase effect
- (D) Cueing effect

c. The slope of the line joining the points (1,2) and (4,5) is

- (A) 0
- (B) 1
- (C) 2
- (D) 3

d. If (x, y) is the a point inside the clipping window then it's code according to the Cohen-Sutherland algorithm is

- (A) 0000
- (B) 0001
- (C) 1000
- (D) 1111

e. If (x,y,w), $w \neq 0$, is a point in the homogeneous coordinate system then it's equivalent in two dimensional system is

- (A) (x,y,1)
- (B) (x,y,0)
- (C) (x/w,y/w)
- (D) (x,y,x-y)

- b. Describe how an arc of a circle is drawn. (8)
- Q.4** a. Explain the Cohen-Sutherland line clipping algorithm. (8)
- b. Describe the task of finding the Intersection of a line with another line and a plane. (8)
- Q.5** a. Find the form of the matrix for reflection about a line L with slope m and y intercept (0, b). (8)
- b. Explain the rotation about an axis through the origin in 3-D affine transformations. (8)
- Q.6** a. Write a method for drawing a mesh using OpenGL. (8)
- b. Describe two-and three-point perspective projections. (8)
- Q.7** a. Explain the technique of Gouraud shading. (8)
- b. Describe the Depth buffer algorithm for removing hidden surfaces. (8)
- Q.8** a. Explain recursive flood-fill algorithm. (6)
- b. Which pixels on an edge belong to a polygon? Explain. (5)
- c. Briefly explain prefiltering and post filtering approaches to antialiasing. (5)
- Q.9** a. Explain the de Casteljau algorithm for three points. Can de Casteljau algorithm be extended to any number of points? (8)
- b. Explain 'Affine Invariance' and Convex Hull property' with respect to Bezier curve. (8)