ROLL NO. _____

Code: AC111/AT111 Subject: COMPUTER GRAPHICS & VISUALIZATION

AMIETE – CS/IT (New Scheme)

Time: 3 Hours **JUNE 2016** **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. Each screen point is referred to as _____.
(A) Resolution **(B)** Pixel
(C) Persistence **(D)** Dot Pitch

b. In CRT, the electron intensity is adjusted using _____.
(A) Accelerating anode **(B)** Control grid
(C) Electron gun **(D)** Focusing anode

c. Lower persistence phosphorus is used in
(A) Animation **(B)** Simple object
(C) Complex object **(D)** All of these

d. Memory area holding the intensity information of an image is called
(A) Refresh buffer **(B)** Font cache
(C) Picture definition **(D)** video controller

e. Digitizing a picture definition into a set of intensity values is known as _____.
(A) Digitization **(B)** Scan conversion
(C) Refreshing **(D)** Scanning

f. The transformation in which an object is moved in a minimum distance path from one position to another is called
(A) Rotation **(B)** Replacement
(C) Translation **(D)** Scaling

g. Coordinates of window are known as _____.
(A) Screen coordinates **(B)** World coordinates
(C) Device coordinates **(D)** Cartesian coordinates

h. In Bresenham's algorithm, while generating a circle, it is easy to generate?
(A) One octant first and other by successive reflection
(B) One octant first and other by successive rotation
(C) One octant first and other by successive translation
(D) All octants

i. Why a circle drawn on the screen appears to be elliptical?
(A) It is due to the aspect ratio of monitor
(B) Screen has rectangular shape
(C) Our eyes are not at the same level on screen
(D) CRT is completely spherical

j. In bresenham's algorithm error term is initialized to ?
(A) 0 **(B)** 1
(C) -1/2 **(D)** None of these

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

Q.2 a. How Interactive graphics system is more useful than non-interactive graphics systems? **(8)**

b. Give very brief description of **(8)**
(i) Input devices (ii) GUI
(iii) Tablet

Q.3 a. Develop the Bresenham's line drawing to draw lines of any scope. **(8)**

b. Differentiate Bresenham's and DDA line drawing Algorithm. **(8)**

Q.4 a. Explain fill area attributes and scan line polygon filling algorithm with the help of example? **(8)**

b. Explain aliasing and anti-aliasing with example. **(8)**

Q.5 a. Use the Cohen Sutherland algorithm to clip line P1(70,20) and P2(100,10) against a window lower left hand corner (50,10) and upper right hand corner (80,40). **(8)**

b. Describe the Sutherland-Hodgeman polygon clipping algorithm. **(8)**

Q.6 a. Prove that simultaneous shearing in both direction (x & y direction) is not equal to the composition of pure shear along x-axis followed by pure shear along y-axis. **(8)**

b. Write and explain homogeneous co-ordinate system. Why it is required to be considered while transforming an object from one reference frame to other reference frame? **(8)**

Q.7 a. What is animation? **(8)**

b. What are the different methods to produce real time animation? **(8)**

Q.8 a. What is an illumination model? **(8)**

b. Develop an illumination model to consider ambient light, specular reflection and diffused reflection. **(8)**

Q.9 a. What is virtual reality? **(8)**

b. What is the main purpose of openGL? **(8)**