

**AMIETE – CS/IT (New Scheme)**

Time: 3 Hours

**June 2019**

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. Types of computer graphics are  
(A) Vector and raster (B) Scalar and raster  
(C) Vector and scalar (D) None of these
- b. GUI stands for  
(A) Graphics user interaction (B) Graphical user interface  
(C) Graphics usual interface (D) None of these
- c. The visual language includes \_\_\_\_\_ for representing visual sentences.  
(A) Visual languages (B) Icons  
(C) Both (A) & (B) (D) None of these
- d. Expansion of line DDA algorithm is  
(A) Digital difference analyzer (B) Direct differential analyzer  
(C) Digital differential analyzer (D) Data differential analyzer
- e. In Bresenham's line algorithm, if the distances  $d1 < d2$  then decision parameter  $P_k$  is  
(A) Positive (B) Equal  
(C) Negative (D) Either (A) or (C)
- f. Coordinate references in the polyline function are stated as  
(A) Relative coordinate values (B) Absolute coordinate values  
(C) Current position (D) Real coordinate values
- g. The basic parameter to curved attributes are  
(A) Type (B) Width  
(C) Color (D) All of these

- h. Color information can be stored in  
 (A) Main memory (B) Secondary memory  
 (C) Graphics card (D) Frame buffer
- i. The process of filling an area with rectangular pattern is called  
 (A) Tiling (B) Linear fill  
 (C) Tint-fill (D) Soft-fill
- j. During 2-D rotation, clockwise direction means Q is  
 (A) +ve (B) -ve  
 (C) +ve or -ve (D) None of these

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

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- Q.2** a. List some applications for large-screen displays. (4)
- b. List the operating characteristics for the following display technologies: raster refresh systems, vector refresh systems, plasma panels, and LCDs. (12)
- Q.3** a. Write Bresenham's line algorithm procedure and write code to draw line between end points (20, 10) and (30, 18) (10)
- b. Write the procedure for Midpoint circle algorithm (6)
- Q.4** a. Write notes on OpenGL line and curve functions (8)
- b. Write a procedure to determine whether a given point is inside or outside of a cube with a given set of coordinates. (8)
- Q.5** a. Show that the composition of two rotations is additive by concatenating the matrix representations for  $R(\theta_1)$  and  $R(\theta_2)$  to obtain  $R(\theta_1) \cdot R(\theta_2) = R(\theta_1 + \theta_2)$  (8)
- b. Write OpenGL routine that moves the n vertices of a polygon from one world coordinate position to another, and regenerates the translated polygon. (8)
- Q.6** a. Write a complete program to implement the Liang-Barsky line-clipping algorithm (10)
- b. Compare the number of arithmetic operations performed in the Cohen-Sutherland and the Liang-Barsky line-clipping algorithms for several different line orientations relative to a clipping window. (6)
- Q.7** a. Explain in detail depth-buffer method for detecting visible surfaces (10)
- b. Illustrate diffuse reflection in detail. (6)

- Q.8** a. Discuss about Constant-Intensity Surface Rendering and Phong Surface Rendering (8)
- b. List various interactive picture construction techniques. Explain any two of them in detail. (8)
- Q.9** a. Write short note on Computer-animation languages. (6)
- b. List and explain the development stages of animation sequences. (6)
- c. Write a note on modeling packages. (4)