

5052

B.Tech. Examination, 2017

(Fifth Semester)

(C.S. Branch & I.T. Branch)

COMPUTER GRAPHICS

Paper - I

Time Allowed : Three Hours

Maximum Marks : 50

Note : Attempt any five questions.

- Q. 1.** (a) Explain how the interactive graphics display work with suitable diagram. 5
- (b) Discuss the type of computer graphics in detail. 5
- Q. 2.** (a) Explain all methods of scan conversion of line. 5
- (b) If point $P(2, 3)$ and $Q(10, 7)$ how many pixel are to be illuminate for drawing the line PQ using Bresenham line algorithm. 5
- Q. 3.** (a) Explain the Bresenham circle drawing algorithm. 5
- (b) Calculate the pixel location approximation the first octant of circle having centre at $(20, 25)$ and radius 9 unit using Bresenham's algorithm. 5

(2)

- Q. 4.** (a) Define the transformation. State and explain type of 2D transformation. **5**
- (b) Prove that two successive two-dimensional rotation are additive : **5**
- $$R_{\alpha} R_{\beta} = R_{(\alpha + \beta)}$$
- Q. 5.** (a) Prove that 2 successive 2D rotation are commute : **5**
- $$R_{\alpha} R_{\beta} = R_{\beta} R_{\alpha}$$
- (b) Explain translation, scaling and rotation in 3D. **5**
- Q. 6.** (a) What is parallel projection ? What are different type of parallel projection. **5**
- (b) What do you understand by clipping and also write condition of point clipping, line clipping, and end point clipping. **5**
- Q. 7.** Explain the acceptance and rejection test using bit codes in the Cohen-Sutherland line clipping algorithm and give suitable example to explain the concept. **10**
- Q. 8.** Write short notes on any four of following : **10**
- (a) Diffusion reflection
 - (b) Ambient Hight
 - (c) Polygon
 - (d) LCD
 - (e) Ground rules for Graphics software design.
 - (f) Bezier curve and B-spline curve.

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COMPUTER GRAPHICS

Paper - I

Time Allowed : Three Hours

Maximum Marks : 50

Note : Attempt any five questions.

- Q. 1. (a) What is computer graphics ? Explain types of computer graphics. 5
- (b) Describe briefly Bresenham's circle drawing algorithm. 5
- Q. 2. (a) Distinguish between window port and view port in 2D clipping how are lines grouped into visible, invisible and partially visible categories ? 5
- (b) Explain two dimensional translation and scaling with an example. 5

(2)

- Q. 3.** (a) Explain the method of adding shadows to objects. 5
- (b) Write about Cohen-Sutherland's line clipping algorithm. 5
- Q. 4.** (a) Discuss on Area subdivision method of hidden surface identification algorithm. 5
- (b) Derive simple illumination model. Include the contribution of diffuse, ambient and specular reflection. 5
- Q. 5.** Discuss the following : 10
- (a) B-spline and Bezier curves
- (b) Mid point circle generating algorithm
- Q. 6.** (a) Obtain a transformation matrix for rotating an object about a specified pivot point. 5
- (b) Compare and contrast between RGB and CMY color models. 5
- Q. 7.** Write short notes on any two of the following : 10
- (i) Aliasing
- (ii) Liang Barsky algorithm.
- (iii) Attenuation

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B.Tech. Examination, 2015

(Fifth Semester)

(C.S. Branch & I.T. Branch)

COMPUTER GRAPHICS

Paper-I

Time Allowed : Three Hours

Maximum Marks : 50

Note : Attempt any five questions.

- Q. 1.** (a) Distinguish between Raster and Vector graphics methods. When do we prefer ? Why ? 5
- (b) Demonstrate Midpoint circle generation algorithm with example. 5
- Q. 2.** (a) Calculate the pixel location approximation, the first octant of a circle having centre at (4, 5) and radius 4 units using Bresenham's algorithm. 5
- (b) What is aliasing ? Explain different methods of minimizing its effects. 5

(2)

Q. 3. (a) The reflection along the line $y = x$ is equivalent to the reflection along the x -axis followed by counter clockwise rotation by θ degrees. Find the value of θ .

(b) Prove that 2 successive 2D rotation are additive : 5

$$R(\theta_1) \cdot R(\theta_2) = R(\theta_1 + \theta_2)$$

Q. 4. A cube is placed at the origin of 3D system. Such that all its vertices have positive coordinates value and sides are parallel to the three principal axes. Indicate a convenient position of a viewer at which he can see a 2-point perspective projection. Verify that such a view is generated. 10

Q. 5. Discuss on Area subdivision method of hidden surface identification algorithm. 10

Q. 6. Given control points (10, 100), (50, 100), (70, 120) and (100, 150). Calculate coordinates of any four points lying on the corresponding Beizer curve. 10

Q. 7. How are periodic B-spline curves different from non-periodic B-spline curves ? 10

Q. 8. Compare Flat shading and Smooth shading with respect to their characteristics and types. 10

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B.Tech. Examination, 2014

(Fifth Semester)

(C.S. Branch & I.T. Branch)

COMPUTER GRAPHICS

Paper : I

Time Allowed : Three Hours

Maximum Marks : 50

Note : Attempt any **five** questions.

- Q. 1.** (a) What are the major application areas of computer graphics ? **5**
- (b) What is refresh buffer ? Identify the contents and organization of the refresh buffer for the case of raster and vector display. **5**
- Q. 2.** (a) Consider the line from (5,5) to (13,9). Use of the Bresenham Algorithm to rasterise the line. **5**
- (b) What is meant by anti aliasing ? Explain various methods used to develop antialiasing routines. **5**
- Q. 3.** An object is defined by the co-ordinates (1,1), (6,6), (9,1) and (9,6). Find the composite matrix for the following transformations : **10**

P.T.O.

(2)

(a) Translate the object by (2,2) w.r.t. a point (-2, -2).

(b) Rotate the translated object by an angle 45 degree.

Q. 4. Use the cohen sutherland algorithm to clip line P_1 (70,20) and P_2 (100,10) against a windows lower left hand corner (50,10) and upper right hand corner (80, 40). **10**

Q. 5. What is generalized clipping ? What do you understand by interior and exterior clipping ? **10**

Q. 6. Given a rectangle panallilopiped which is unit distance on z-axis, 2-distance on x-axis & 3-distance on y-axis. What is the effect of scaling when scaling

factor $S_x = \frac{1}{2}$ $S_y = \frac{1}{3}$ and $S_z = 1$? **10**

Q. 7. (a) Differentiate parallel projection and perspective projection. **5**

(b) Define the term : **5**

(i) view volume

(ii) Vanishing point

(iii) view plane

Q. 8. Write short notes on any two : **10**

(a) Random Scan Display

(b) Manual Drafting Vs Computer Graphics

(c) CAD

(d) GUI