Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER • 2014

Subject Code: 160703 Date: 23-05-2014

Subject Name: Computer Graphics

Time: 10:30 am - 01:00 pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** **Define the following terms:** **07**

(1) Aliasing
(2) Persistence
(3) Frame buffer
(4) Resolution
(5) Scan conversion
(6) Aspect ratio
(7) Antialiasing

(b) **Write a short note on:** (1) Cathode ray tube (2) Shadow mask **07**

Q.2 **(a)** Write and explain the boundary fill algorithm and flood fill algorithm. **07**

(b) Write and explain the midpoint circle generating algorithm. **07**

OR

(b) Write and explain the midpoint ellipse drawing algorithm. **07**

Q.3 **(a)** Prove that the reflection of a square ABCD [(2,2), (4,2), (4,4), (2,4)] about x axis (y =0) and then rotation of the resulting square about 60^0 will not be same if the order of transformation (first rotation and then reflection) is changed. **07**

(b) **Write a short on:** (1) 2D Rotation (2) Reflection about an arbitrary line **07**

OR

Q.3 **(a)** **Solve the followings:** Locate the new position of the triangle [(5,4), (8,3), (8,8)] after its rotation by 90^0 clockwise about the Centroid. **07**

(b) Write a short on: (1) 2D Reflection (2) Rotation about an arbitrary point **07**

Q.4 **(a)** Define Clipping. Write and explain Cohen – Sutherland line clipping algorithm. **07**

(b) **Answer the followings:** **07**

(1) What do you mean by view plane?
(2) What is type face?
(3) Define: B-Spline curve
(4) What is Polygon mesh?
(5) What is surface patch?
(6) What is a spline?
(7) What are the different ways of specifying spline curve?

OR

Q.4 **(a)** Define Clipping. Write and explain Liang - Barsky line clipping algorithm. **07**

(b) **Answer the followings:** **07**

(1) What is the need of homogeneous coordinates?
(2) What is Transformation?
(3) What is cubic spline?
(4) What is Bezier Basis Function?
(5) What is bitmap and what is pixmap?
(6) List out the important properties of Bezier Curve.
(7) Differentiate between interpolation spline and approximation spline?

Q.5 **(a)** List out the different types of projections and explain any two in detail. **07**

(b) Explain XYZ color model. **07**

OR

Q.5 **(a)** **Write a short note on:** **07**

(1) Back face detection method (2) Depth buffer method for detection

(b) Explain CMY color model. **07**

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