



Name : .....  
Roll No. : .....  
Invigilator's Signature : .....

**CS/M.Tech (CSE)/SEM-3/MCSE-302B/2012-13**

**2012**

**GRAPHICS & MULTIMEDIA**

*Time Allotted : 3 Hours*

*Full Marks : 70*

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP – A**

Answer any *seven* questions

$7 \times 2 = 14$

1.
  - i) What is meant by plasma panel ?
  - ii) What is meant by refresh CRT ?
  - iii) Define 2D and 3D translation.
  - iv) What is the disadvantage of Bresenham's line drawing algorithm ?
  - v) What is the difference between flood-fill and boundary fill algorithm ?
  - vi) What is meant by Bezier curve ?
  - vii) What is meant by 2D reflection ? Explain.
  - viii) Write the transformation matrix for 2D rotation about X-axis.
  - ix) If we use 12-bit pixel values in a lookup table representation, how many entries does the lookup table have ?
  - x) Write some applications of multimedia systems.



**GROUP – B**

Answer any *four* of the following.

$$4 \times 14 = 56$$

2. a) Write the algorithm for Bresenham's line drawing. Write the algorithm for mid-point ellipse.
- b) Draw a circle using Bresenham's algorithm in the first quadrant only with radius 4 having the centre at ( 1, 1 ).

$$4 + 4 + 6$$

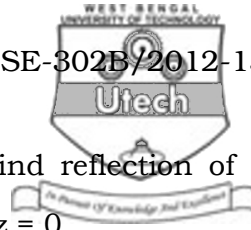
3. a) Write the algorithms for flood fill and boundary fill.
- b) Describe with the help of a suitable diagram area filling by scan-line conversion algorithm.

$$2 + 12$$

4. a) What is meant by affine transformation ? What is meant by composite transformation ?
- b) What would be the composite transformation matrix for reflection through an arbitrary line ?
- c) Prove that if rotation angle is  $\Theta$ , the transformation matrix formed when multiplied by the transformation matrix formed when angle is  $-\Theta$  is equal to the identity matrix.

$$3 + 6 + 5$$

5. a) What is meant by 3D scaling ? Write the transformation matrix for 3D scaling.
- b) What is the 3D transformation matrix for reflection about YZ plane ?



- c) Write 3D transformation matrix to find reflection of a point P ( 100, 200, 300 ) about plane  $z = 0$ . 3 + 3 + 5 + 3
- d) Describe 3 D shear. 3 + 3 + 5 + 3
6. a) Explain Cohen-Sutherland Line clipping algorithm.
- b) Given a window A ( 20, 20 ), B ( 60, 20 ), C ( 60, 40 ), D ( 20, 40 ). Use any clipping algorithm to find the visible portion of the line P ( 30, 50 ) to Q ( 70, 30 ) inside the window.
- c) Explain Sutherland – Hogman Polygon clipping algorithm. 5 + 4 + 5
7. a) Describe in brief cubic B-spline curve.
- b) Describe cubic Bezier curve.
- c) Find the equation of Bezier curve which passes through points ( 0, 0 ) and ( -2, 1 ) and is controlled through points ( 7, 5 ) and ( 2, 0 ) 3 + 3 + 8
8. a) Define multimedia systems.
- b) Define MPEG and JPEG format. What is the difference between the two ?
- c) Write a short note on data compression.
- d) Explain the different forms of animation techniques used in multimedia systems. 3 + 3 + 3 + 5

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