Total No. of Questions : 10] [Total No. of Printed Pages : 3

Roll No. .....

CS–504(N)

B. E. (Fifth Semester) EXAMINATION, Dec., 2010

(New Scheme)

(Computer Science & Engg. Branch)

COMPUTER GRAPHICS AND MULTIMEDIA

(RCC)

[CS – 504(N)]

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt any *one* question from each Unit. All questions carry equal marks.

Unit – I

1. (a) Describe the working of raster refresh display tube. How different grey levels are incorporated in it ?
   (b) What are the drawbacks of DDA line drawing algorithm ? How are they removed or minimized in Bresenham's algorithm ?

Or

2. (a) Differentiate between interlaced and non-interlaced monitors. What is the fraction of the total refresh time per frame spent in retrace of electron beam for a non-interlaced raster system with resolution of 1280 × 1024, a refresh rate of 60 Hz, a horizontal retrace time of 5 microseconds and a vertical retrace time of 500 mciroseconds ?

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   (b) Discuss how the use of homogeneous co-ordinates permits us to use efficient computing of geometrical transformations in computer graphics.

Unit – II

3. (a) Describe the composite transformation of two successive translations for three dimensional objects.
   (b) Determine a sequence of basic transformations that are equivalent to the x-direction shearing matrix.

Or

4. (a) Find the transformation required to reflect a polygon whose vertices are A (– 1, 0), B (0, – 2), C (1, 0) and D (0, 2) about the line $y = x + 2$. Find reflected image.
   (b) What is scan-conversion ? Mention some side-effect of scan-conversion.

Unit – III

5. (a) Write down the transformation matrix for shearing z-axis parallel projection method.
   (b) Device the B-spline matrix for the standard cubic, uniform, non-rational B-spline. Show all of the working.

Or

6. (a) Rotate a triangle A (0, 0), B (2, 2), C (4, 2) about the origin and about p (– 2, – 2) as by an angle of 45°.
   (b) Find the normalization transformation for mapping a window having (2, 2) as the lower left corner and (4, 6) as the upper right corner onto :
      (i) A view port that is the entire normalized device screen
      (ii) A view port having (0,0) as lower left corner and (1/2, 1/2) as the upper right corner.

Unit – IV

7. (a) Name various color models and explain each of them.

   (b) Explain the following line-clipping algorithms :

   (i) Cohen-Sutherland algorithm

   (ii) Mid-point subdivision algorithm

Or

8. (a) Which of the algorithm Cohen-Sutherland algorithm or Liang-Barsky algorithm is more efficient ? Why ?

   (b) Describe the Phongs specular reflection model with Fresnel's law of reflection.

Unit – V

9. (a) What is basic concept of Hypertext ? Why are hypertext used for information representation in multimedia package ? Name the tools used to implement it.

   (b) What are the evolving technologies of multimedia ?

Or

10. (a) What is the key limitation of relational database in implementing multimedia applications ?

    (b) Give the compression technique used in Facsimile and Document Images.