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BT-8/M-14 **8802**

INTERACTIVE COMPUTER GRAPHICS

CSE-404

Time : Three Hours] [Maximum Marks : 100

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Compare and contrast organization of raster scan and random scan display systems. **10**

   (b) Explain the use of colour look up tables. **10**

2. (a) What is function of frame buffer and display processor in an interactive computer graphics ? Consider raster system with resolution 1280×1024. What size frame buffer (in bytes) is needed for the system to store 24 bits per pixel ? **10**

   (b) Explain the construction and working of beam penetration CRT. **10**

Unit II

3. (a) Write Bresenham's Line drawing algorithm for a line whose slope is between 0° and 45°. **10**

   (b) Use the algorithm given in part (a) to scan convert a line from pixel coordinate (1,1) to (5,5) **10**

4. (a) What is 2D scaling transformation ? Write the matrix representation of 2D scaling transformation in homogeneous coordinates. **10**

   (b) Explain window-to-viewpoint coordinate transformation. http://www.kuonline.in **10**

Unit III

5. Explain the working of the following input devices :

   (a) Light Pen **10**

   (b) Track Ball. **10**

6. (a) Write down the algorithm for the Cohen-Sutherland line clipping. Also explain its working. **10**

(b) Explain the following positioning techniques : Rubber-Band and Panning. **10**

Unit IV

7. (a) Explain the following 3D transformation along with their matrix representations : Translation and Rotation. **10**

(b) What is oblique parallel projection? How is it different from perspective projection ?**10**

8. (a) How are hidden surface calculations simplified in area subdivision algorithm ? Explain. **10**

(b) Explain Phong specular reflection model of shading. **10**