

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

Roll No.

CS-504(N)

B. E. (Fifth Semester) EXAMINATION, June, 2011

(Computer Science & Engg. Branch)

COMPUTER GRAPHICS AND MULTIMEDIA

[CS-504(N)]

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

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

Unit-I

1. (a) List the operating characteristics of the following display technologies :
 - (i) Raster refresh systems
 - (ii) Vector refresh systems
 - (b) Explain the steps required to plot a line whose slope is between 45° and 90° using Bresenham's method.
- Or*
2. (a) Write the steps required to Scan-convert a circle using Bresenham's algorithm.
 - (b) Differentiate between boundary-fill and flood-fill algorithms.

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Unit - II

3. (a) Reflect the polygon whose vertices are A $(-1, 0)$, B $(0, -2)$, C $(1, 0)$ and D $(0, 2)$ about :
- (i) the vertical line $x = 3$
 - (ii) the line $y = x + 4$
- (b) Draw a flowchart, illustrating the logic of the Sutherland-Hodgman algorithm.

Or

4. (a) Derive the form of the transformation matrix for a reflection about an arbitrary line with equation $y = mx + c$.
- (b) Find the work station transformation that maps the normalized device screen onto a physical device whose x extent is 0 to 199 and y extent is 0 to 639 where the origin is located at the :
- (i) Lower left corner
 - (ii) Upper left corner of the device

Unit - III

5. (a) Differentiate between parallel and perspective projection. 10
- (b) Assuming that one allows 2^{24} depth value levels to be used, how much memory would a 1024×768 pixel display require to store the Z-buffer ? 5
- (c) How does the basic scan-line method determine which surfaces are hidden ? 5

Or

- (a) Explain the properties of Bezier-B-Spline approximation. 10

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- (b) Find the general form of an oblique projection onto the xy -plane. 5
- (c) Explain the use of Blending functions. 5

Unit – IV

- 7. (a) Explain the NTSC YIQ color model.
- (b) Differentiate between local illumination and global illumination model.

Or

- 8. (a) Verify the fact that the Y in the CIE XYZ color model is the same as the Y in the NTSC YIQ color model.
- (b) Differentiate between Gouraud shading and Phong shading.

Unit – V

- 9. (a) Explain multimedia system architecture.
- (b) Define the following Data and File format standards :
 - (i) TIFF
 - (ii) DIB

Or

- 10. (a) Explain Multimedia Authoring tools.
- (b) Explain various multimedia compression standards.