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**CS-5004 (CBGS)****B.E. V Semester**

Examination, December 2017

**Choice Based Grading System (CBGS)****Computer Graphics and Multimedia***Time : Three Hours**Maximum Marks : 70*

- Note:** i) Attempt any five questions.  
ii) All questions carry equal marks.

1. a) Compare and contrast the raster and random scan system. In a 24-bit plane color frame buffer with a 10 bit wide lookup tables for each of three colors, how many colors are possible at a given instant? How many total colors are possible?
- b) Find the pixel location approximating the first octant of a circle having a center (10, 13) and a radius of 5 units using the Bresenham's circle algorithm.
2. a) Consider a line coordinates (-3, 3) and (4, -4). Determine the line segment using generalized Bresenham's integer algorithm.
- b) Explain how flood-fill algorithm would fill the rectangular region defined by 10x8 pixel grid assuming (3,3) to be the seed point using 8-connected definitions for region pixels.
3. a) Find the reflection of a point (p, q) about a line  $y=mx+c$ .
- b) Use the Cohen-Sutherland out code algorithm to clip two lines  $P_1(40, 15) - P_2(75, 45)$  and  $P_3(70, 20) - P_4(100, 10)$  against a window A(50,10), B(80,10), C(80,40) and D(50,40).

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4. a) Devise a method to reflect a 3D object about an arbitrary plane.
- b) What are the properties associated with curve? Explain significance of each of them.
5. a) Define orthographic and oblique projection. Drive mathematical model and transformation matrix for parallel projection.
- b) Differentiate between diffuse and specular reflection.
6. a) Compare and contrast the TIFF file formats with the RIFF file formats.
- b) Write characteristics of a multimedia presentation.
7. a) Explain briefly the various real-time animation techniques used in computer assisted animation. What is the advantage of real-time animation over frame-by-frame animation?
- b) What are the advantages and disadvantages of lossless compression? Compare and contrast these with lossy compression schemes.
8. Write short notes on (any two):
  - a) Multimedia architecture
  - b) Z-buffer algorithm
  - c) HSV color modal
  - d) Audio components of an audio system

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