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B.E. / B.Tech.(Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2011

Computer Science and Engineering

Seventh Semester

**CS 9401 – GRAPHICS AND MULTIMEDIA**

(Regulations 2008)

Time: 3 hr

Max Mark: 100

Answer ALL questions

PART A – (10 x 2 = 20 Mark)

1. What types of 'coordinate systems' are used in Graphics applications?
2. What is the basic principle behind 'mid-point' circle drawing procedure?
3. What is 'Octree' representation?
4. What are the equivalents of '*window*' and '*viewport*' in 3D Graphics?
5. How to set '*foreground*' and '*background*' colors in OpenGL?
6. List any four popular animation techniques.
7. What are 'asymmetrical applications'? Give example.
8. What types of frames are used in MPEG standard for Video?
9. Identify the contrast between ordinary text documents and Hypermedia documents.
10. List the attributes of Digital Audio.

PART B – (5 x 16 = 80 Mark)

11.
  - i) Compute the points on the lines AB [(2,5) (10,9)], CD [(0,4) (8,0)] using Bresenham's line drawing algorithm. (8)
  - ii) Find the transformed coordinates of a line at (2,3) and (6,7), when reflected with respect to an axis passing through (-4,-4) and (4,-4) (4)
  - iii) What techniques are used to draw neat thick lines in 2D Graphics applications? (4)

12. a) i) How are visible surface detection algorithms classified? Explain with one (12)  
example for each class.

ii) Find the composite transformation matrix that converts a line in 3D space at  
[(5, 10, -5) (15, 10 -5)] to a line in YZ plane. (Assume right-handed coordinate  
system) (4)

Or

b) i) What are cubic Bezier curves? Explain the properties. (8)

ii) Derive the transformation matrix for perspective projection of a 3D point. (8)

13. a) i) What are the standard OpenGL graphics primitives? How are they drawn? Give  
examples. (8)

ii) Demonstrate with code examples the implementation of parallel and  
perspective projections in OpenGL, for a solid cube. (8)

Or

b) i) Explain the CIE (XYZ) color model. What are the advantages of the  
chromaticity diagram? (8)

ii) Summarize the HSV and HLS color models. (8)

14. a) i) What do you know about the TIFF file format? (8)

ii) Write about the CCITT Group 3 2D standard. (8)

Or

b) i) Describe the 'baseline sequential JPEG encoding' process for color images. (12)

ii) Compute the Forward DCT coefficient matrix for the following input sub  
image. (4)

$$\begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$$

15. a) i) Write notes on the types of Multimedia authoring systems. (8)

ii) Critically examine the most common issues for video playback. (8)

Or

b) i) Throw light on some of the popular metaphors for User Interface Design. (8)

ii) What are the components of a Hypermedia message? (8)

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