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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)
Third Semester, Master of Computer Applications (MCA)
Semester End Examination; Dec - 2016/ Jan - 2017
Computer Graphics

Time: 3 hrs   *Max. Marks: 100*

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

1 a.	Describe DDA line drawing algorithm. Trace the algorithm with the end points (20, 10) and (30, 18).	10
b.	Write an OpenGL C++ program to draw a line segment using OpenGL output primitives.	5
c.	Write a note on Error Handling in OpenGL.	5
2 a.	Describe the OpenGL polygon Fill-area functions.	10
b.	Write an algorithm to draw an ellipse using midpoint ellipse drawing algorithm.	10

UNIT - II

3 a.	Explain the following : i) Two-Dimensional Reflection ii) Two-Dimensional shear.	10
b.	Find new vertices to rotate triangle about the origin with vertices at original coordinates (10, 20), (10, 10), (20, 10) by 30 degree.	10
4 a.	Describe the Three-dimensional geometric transformations.	10
b.	Illustrate the steps to obtain the transformation matrix when an object is to be rotated about an axis that is parallel to one of the coordinate axis.	5
c.	List and explain OpenGL geometric transformation functions used in 3D transformation.	5

UNIT - III

5 a.	Write a short note on : i) Two-Dimensional viewing pipeline ii) Clipping window.	10
b.	Explain Liang-Barsky line clipping algorithm.	10
6 a.	Describe the steps involved in mapping the clipping window into a normalized square.	10
b.	Explain Weiler-Atherton polygon clipping algorithm.	10

UNIT - IV

7 a.	Describe Three-Dimensional viewing coordinate parameters.	10
b.	Distinguish between parallel and perspective projection.	10
8 a.	Illustrate the steps to obtain perspective projection transformation coordinates.	10
b.	Derive an expression for the normalized perspective-projection transformation matrix.	10

UNIT - V

9 a. Derive cubic Bezier Matrix. 10

  b. What is computer animation? Explain basic approaches to design of animation sequences. 10

10 a. Explain the traditional animation techniques and list the general animation functions involved in managing the objects. 10

  b. Explain the Bezier curves techniques. List the properties of Bezier curves. 10

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