USN ☐☐☐☐☐☐☐☐☐☐ **10CS65**

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Computer Graphics and Visualizations

Time: 3 hrs. Max. Marks:100

Note: *Answer FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Briefly explain the applications of computer graphics. **(08 Marks)**
  b. With a neat diagram, explain the working of CRT. **(06 Marks)**
  c. Describe the graphics geometric pipeline Architecture with a figure. **(06 Marks)**

2 a. List and explain different polygon types in OpenGL. **(06 Marks)**
  b. Explain stroke text and Raster text with suitable figures and mention how size of the text can be changed in each form of texts. **(06 Marks)**
  c. Explain Indexed color Model with suitable figure. **(08 Marks)**

3 a. Explain all three input modes with relevant figures. **(09 Marks)**
  b. Describe the importance of display lists. Explain the OpenGL functions used to define and execute a display list with a suitable example. **(07 Marks)**
  c. Discuss the functionality of Display Callback (glutDispalyFunc( )) and Idle Callback (glutpostRedisplay( )). **(04 Marks)**

4 a. List and explain different Frames in OpenGL. **(06 Marks)**
  b. Explain how to define Vertex Arrays and color Arrays to store vertex and color values. **(07 Marks)**
  c. Explain Affine transformations. **(07 Marks)**

PART – B

5 a. Describe Translation and scaling operations in homogeneous coordinate system with relevant Translation and scaling transformation matrices. **(08 Marks)**
  b. Write the OpenGL program modules to define a color cube and spin it around arbitrary axes using mouse buttons. **(10 Marks)**
  c. What are the advantages and Quaternion's? **(02 Marks)**

6 a. What is the use of set_view_ reference_ point ( ), set_view_plane_normal ( ) and glLookAt ( ) functions in setting the camera view? **(06 Marks)**
  b. Describe two types of simple projection methods. **(12 Marks)**
  c. Explain glortho ( ) function with syntax. **(02 Marks)**

7 a. Explain 3 types of light-material interactions with figures. **(06 Marks)**
  b. Describe point sources and spotlight sources with figures. **(06 Marks)**
  c. Describe Phong Lighting Model. **(08 Marks)**

8 a. Explain Cohen – Sutherland's line clipping algorithm. **(08 Marks)**
  b. Describe Bresenham's line drawing algorithm. **(08 Marks)**
  c. What is Hidden surface Removal? Describe scanline algorithm. **(04 Marks)**

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