

Code: IT4T5

II B.Tech - II Semester – Regular Examinations - JUNE 2014

**COMPUTER GRAPHICS
(INFORMATION TECHNOLOGY)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Define key frames. Describe with suitable example. 7 M
b) What do you mean by shading of objects? 7 M
2. a) What is texture? Define fractals. 7 M
b) Explain the fundamentals of 2D and 3D computer graphics. 7 M
3. a) Explain briefly the OpenGL Utility Toolkit (GLUT). 7 M
b) Describe the commands in OpenGL for translation, rotation and scaling. 7 M
4. a) Explain in detail the Cohen-Sutherland line clipping algorithm with an example. 7 M
b) With suitable examples, explain all 3D transformations. 7 M

5. a) Write down and explain the details to build a camera in a program. 7 M
- b) Describe the Bresenham's algorithm to draw a circle whose centre is origin and radius is 7. 7 M
6. a) What do you mean by perspective projection? How are vanishing points generated? 7 M
- b) Write the transformation matrices for rotation about origin in 3D. 7 M
7. a) When a 3D object is to be rotated about any axis that is parallel to x-axis, we need to perform some additional transformation. Derive the 3D rotation transformation matrix for rotation of an object about x-axis. 7 M
- b) How can we simulate acceleration in animation? Give the expressions for acceleration. 7 M
8. a) Explain the Bresenham's line drawing algorithm in 2D. Hence give the pixel positions for the line joining the points (4, 4) and (9, 9). 7 M
- b) Explain the following statements:
- (i) `void glPolygonMode(GLenum face, GLenum mode);`
 - (ii) `void glFrontFace(GLenum mode);` 7 M