

**SUBJECT CODE NO:- P-348**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**S.E. (CSE/IT) Examination MAY/JUNE-2016**  
**Computer Graphics**  
**(Revised)**

[Time: Three Hours]

[Max Marks:80]

“Please check whether you have got the right question paper.”

N.B

- 1) Question No.1 and 6 are compulsory.  
 2) Attempt any two questions from Question No 2 to 5 and Question no.7 to 10 from section A & B respectively.

**Section A**

- Q.1 Attempt any five (define) 10
- i) Pixel
  - ii) Rasterization
  - iii) Emissive display
  - iv) Call back function in Open GL
  - v) Vector system
  - vi) Image depth
  - vii) Different image formats used in CG
- Q.2 a) Describe operating characteristics of raster system & vector system. 08  
 b) What do you mean by display file? What are the functions for segmenting display files? 07
- Q.3 a) What are the major components of a graphics pipeline and how do they interact? 08  
 b) Explain offline transformation. 07
- Q.4 a) Explain glut Init Display Mode() function of OpenGL in detail. 07  
 b) List and explain in detail different frame co-ordinates in OpenGL. 08
- Q.5 a) Write OpenGL code to draw polygon (square) of unit length centered at the origin. 07  
 b) Explain any five classes of logical i/p devices for an API. 08

**Section B**

- Q.6 Attempt any five 10
- i) Define orthographic projection.
  - ii) What is polygon rasterization?
  - iii) Define specular reflection.
  - iv) What is homogeneous co-ordinate system?
  - v) What do you mean by composite transformation?
  - vi) Define aliasing
  - vii) Enlist types of parallel projection.
- Q.7 a) Explain types of polygon & the algorithm for polygon clipping. 08  
 b) Explain DDA line algorithm. How DDA differs from Bresenham's line algorithm? 07
- Q.8 a) Explain the painter's and Z-buffer algorithm for hidden surface removal. 08  
 b) What will be the effect of scaling factor  $S_x=1/2$  and  $S_y=1/3$  on given triangle  $\Delta ABC$  where  $A(4,1)$ ,  $B(5,2)$ ,  $C(4,3)$ . 07

- Q.9 a) Write short note on phong lighting model? 08  
b) Describe in detail light sources in OpenGL. 07
- Q.10 a) Consider an object ABC with co-ordinates A(1,1) B(10,1) & C(5,5). Rotate object by  $90^0$  in counter clockwise direction & give the co-ordinates of transformed object. 08  
b) What is viewing transformation? What is difference between window and viewport? 07