

Sem-IV/ comp/CBGS/ C.G/NOV-16/28-12-16

Computer Graphics

Q. P.Code : 541800

Duration: 3 Hours



Total Marks assigned: 80

N.B.: (1) Question No. 1 is compulsory.

(2) Attempt any **three** of remaining **five** questions.

(3) Assume any suitable **data** if necessary and clearly state it.

1. (a) What is aliasing? Explain any two anti-aliasing techniques. [05]
(b) Explain OpenGL basic primitives. [05]
(c) Show that the composition of two successive rotation are additive [05]
i.e. $R(\theta_1).R(\theta_2) = R(\theta_1 + \theta_2)$
(d) What is the purpose of Inside-Outside Tests? Explain with an example. [05]
2. (a) Write the mid-point circle drawing algorithm. Using mid-point circle algorithm [10]
Plot the circle whose radius = 10 units.
(b) Apply the Cohen – Sutherland line clipping algorithm to clip the line with [10]
coordinates (30, 60) and (60, 25) against the window with $(X_{wmin}, Y_{wmin}) =$
(10, 10) and $(X_{wmax}, Y_{wmax}) = (50, 50)$
3. (a) Explain Weiler–Atherton polygon clipping algorithm in detail. [10]
(b) Explain Back Surface detection method in detail with an example. [10]
4. (a) Explain and compare Gouraud Shading and Phong Shading. [10]
(b) What are Parallel and Perspective projections and derive the matrix for [10]
perspective projection.
5. (a) Derive the matrix that represents scaling of an object with respect to any fixed [10]
point? Use that matrix to find P^1 for the given point $P(6, 8)$, $S_x = 2$, $S_y = 3$ and
fixed point (2, 2).
(b) Explain the properties of Bezier curves [10]
6. Write a short note on any two of the following [20]
 - (a) Comparison of 3D object representation methods
 - (b) Construction of Koch curve
 - (c) Halftone and Dithering techniques