

Total No. of Questions : 8]

SEAT No. :

PE-4285

[Total No. of Pages : 2

[6582]-57

S.E. (Information Technology)

COMPUTER GRAPHICS

(2019 Pattern) (Semester - IV) (214453)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.

- Q1) a) What is projection? Explain with diagram, oblique - Cavalier, Cabinet, Orthographic - isometric, diametric, trimetric Parallel projections. [9]
- b) Use the Cohen Sutherland Line Clipping Algorithm with the help of region codes to clip a line AB with A (50, 30), B (110,70), and PQ with P (30,70), Q (90,30) to clip a line against a window with lower left-hand corner (40,40) and Upper right-hand corner (100,80). Show Graphic Representation of Original and Clipped Line. [9]

OR

- Q2) a) Explain the basic transformation techniques in 3D Graphics. [9]
- i) Rotation
 - ii) Translation
 - iii) Reflection about XY Plane
- b) Let ABCD be the rectangle window with A (150,150), B(150,200), C (200,200) and D (200, 150). Use Cohen Hodgeman polygon clipping algorithm to clip the convex polygon PQR with P (165,240), Q (180,90), R (100, 175) and find the final coordinates of the clipped polygon. [9]
- Q3) a) Explain in detail with Diagram [9]
- i) RGB Color Model
 - ii) CIE Chromaticity Diagram
 - iii) Color Gamut
- b) Define Shading. Compare Constant Intensity, Halftoning, Gourand Shading and Phong Shading algorithm. [8]

P.T.O.

OR

- Q4)** a) What is a segment? Why do we need segments? Explain the complete process of [9]
- i) Segment Creation,
 - ii) Segment Deletion and
 - iii) Segment Renaming,
- b) Explain in detail combined diffuse and specular reflections with multiple light sources. [8]
- Q5)** a) Write short note on [9]
- i) Design of animation sequence
 - ii) Frame-by-frame Animation techniques
- b) Write short note on Hilbert's and Koch Curve along its Topological and Fractal Dimensions. [9]

OR

- Q6)** a) What is interpolation? Explain the process of curves Approximation. [9]
- b) Explain in detail with diagram Bezier curve generation using midpoint subdivision method. [9]
- Q7)** a) What is the different usage of Virtual Reality? Explain in detail. [6]
- b) What is Haptics Rendering Pipeline Modeling in Virtual Reality? [6]
- c) What is kinematic modeling in a Virtual Reality? [5]

OR

- Q8)** a) What is graphics rendering pipeline in a Virtual Reality system. [6]
- b) Explain gesture interfaces in Virtual Reality. [6]
- c) Explain 3D position trackers. [5]

