Total No. of Questions : 8]

SEAT No. :

P9131

[Total No. of Pages : 2

[6179]-257

S.E. (Information Technology)

COMPUTER GRAPHICS

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

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answers : 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 rightside indicate full marks.***
4) ***Assume Suitable data if necessary.***

Q1) a) Use the Cohen Sutherland Line Clipping Algorithm with the help of region codes to clip a line AB with A (30, 70), B (110, 50) and PQ with P (60, 120), 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]**

b) Explain the basic transformation techniques in 3D Graphics. **[9]**

i) Scaling
ii) Rotation
iii) Reflection about XZ Plane

OR

Q2) a) What is projection? Explain with diagram, oblique - Cavalier, Cabinet, Orthographic - isometric, diametric, trimetric Parallel projections. **[9]**

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 PQRS with P (100, 175), Q (170, 250), R (250, 165), S (180, 100) and find the final coordinates of the clipped polygon. **[9]**

Q3) a) Define Shading. Compare Constant Intensity, Halftoning, Gourand Shading and Phong Shading algorithm. **[9]**

b) Explain in detail with Diagram. **[8]**

i) RGB Color Model.
ii) HSV Color Model
iii) CIE Chromaticity Diagram
iv) Color Gamut

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 Renaming and

iii) Segment Closing

b) Define Illumination. Explain with diagram Phong illumination model and combined diffuse illumination models in detail. **[8]**

Q5) a) Write short note on Hilbert's and Koch Curve along its Topological and Fractal Dimensions. **[9]**

b) What are the steps in desing in animation sequence? Describe about each step briefly. **[9]**

OR

Q6) a) What is curve interpolation? As far as splines are concerned what do Bezier and B-splines curves idicates? **[9]**

b) Write short note on **[9]**

i) Design of animation sequence

ii) Frame - by - frame Animation techniques

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]**

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