# S.E. (Information Technology) COMPUTER GRAPHICS <br> (2019 Pattern) (Semester - IV) (214453) 

Time : $2^{1 ⁄ 2}$ Hours]
[Max. Marks : 70
Instructions to the candidates?

1) Answers: Q. 1 on Q.2, Q. 3 or Q.4, Q. 5 or Q.6, Q. 7 or Q.8.
2) Neat didgخams must be drawn wherever necessary.
3) Figures to theright side indicate full marks.
4) Assume Suitable data if necessary.

Q1) a) Explâin with diagram Cohen Sutherland line cligping algorithm.
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b) Compare homogeneous co-ordinate system and normalized co-ordinate system.
c) Show that the Transformation matrix of reflection about line $y=x$ is equivalent to reflection relative to $x$-axis followed by anticlockwise rotation of 90 degree.

Q2) a) What is the concept of vanishing point in perspective projection? Explain with diagram.
b) Let ABCD be a rectangle window with $\mathrm{A}(20,20), \mathrm{B}(90,20), \mathrm{C}(90,70)$, $D(20,70)$. Find the region codes for the end points \& usé Cohen Sutherland line cipping algorithm to clip the following line QPQ2 with Q1 $(10,10)$ and Q2 $(70,60)$.
c) Explain 3D reflection about XY, YZ, and XZ plane.

Q3) a) What is Shading. Explain with diagram Constant intensity shading method.
b) Explain CMY and HSV color models.
c) What is a segment? How do we create it? Why do we need segments? [5 OR

Q4) a) Compare Gourand and Phong method of shading.
b) What is segment? Explain the concept of segment table and display file.
c) Explain CIE chromaticity, Giagram; also explain how RGB to CMY conversion is done

Q5) a) Explain Kochcurveand its application in detail.
b) Write short notes on
i) Morphing
ii) Design of animation sequence
c) Whatis fractal? Explain Hilbert curve in detail.

Q6) a) Write short notes on
i) B-spline curve
ii) Blending function of Bezier carye
b) What are the methods of controling animation?
c) Explain various types of animation languages.

Q7) a) Explain the physical modeling in Virtual Reality.
b) Explain haptic feedback in Virtual Reality system.
c) What is navigation and manipulation interfaces in virual reality system?

OR
Q8) a) Explain the behavioral modeling in Virtual Reality.
b) What are sound displays in Virtual Reality?
c) Explain Kinematic modeling in Virtual Reality:?

