CG 9P-C

K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

Nov -Dec (2021-2022)

(B.Tech.) Program: Computer Engineering

Examination: SY/TY/LY Semester: III

Course Code: 1UCEC305 and Course Name: Computer Graphics

Duration: 03 Hours Max. Marks: 60

Instructions:

(1) All questions are compulsory.

(2) Draw neat diagrams wherever applicable.

(3) Assume suitable data, if necessary

		Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight:**	**12**		
i)	Define Rasterization and Scan Conversion process.	2	1	R
ii)	Specify advantages and disadvantages of DDA Line drawing algorithm.	2	2	U
iii)	Explain any two Antialiasing techniques	2	2	U
iv)	Solve the transformation operation to translate the square ABCD whose coordinates are A(0,0), B(3,0), C(3,3), D(0,3) by 2 units in both directions and then scale it by 1.5 units in x-direction and 0.5 units in y-direction.	2	3	AP
v)	Define the term 2D viewing, window and viewport	2	4	R

vi)	What are Fractals? Give classification of Fractals.	2	5	U
vii)	Write 3D rotation matrix representation along with the equations.	2	5	U
viii)	Explain Koch Curve.	2	6	U
Q.2	**Solve any four questions out of six.**	**16**		
i)	Compare Random Scan and Raster Scan Techniques.	4	1	An
ii)	Write a procedure for Boundary Fill Algorithm using 8 connected approach.	4	2	U
iii)	Derive window to viewport transformation.	4	4	Ap
iv)	Explain the steps used in rotation of 2 - D object about an arbitrary point and derive the matrices for same.	4	3	Ap
v)	Explain perspective projection and its types.	4	5	U
vi)	Explain the concept of motion capture in animation.	4	6	U
Q.3	**Solve any two questions out of three.**	**16**		
i)	Apply the Liang Barsky line clipping algorithm to clip the line with co-ordinates (35,60) and (80,25) against the window (Xwmin,Ywmin)= (10,10) and (Xwmax,Ywmax)=(50,50)	8	4	AP
ii)	Construct the Bezier curve of degree 3 with four vertices of the control polygon P0(0,0), P1(1,2), P2(3,2) and P3(2,0). (Calculate points)	8	5	Ap
iii)	Derive Midpoint Circle Drawing Algorithm.	8	2	Ap
Q.4	**Solve any two questions out of three.**	**16**		
i)	Writeshort note on Area subdivision method.	8	6	U
ii)	Write Sutherland Hodgeman polygon clipping algorithm with example. What modifications is required on it so it should also work on concave polygon.	8	4	Ap

iii)	Explain Perspective projection. Derive the matrix for perspective projection on XY plane.	8	5	Ap