K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

Subject Code: CEC305 Subject Name: Computer Graphics Date:13/12/2022

Nov – Dec 2022
(B.Tech / M.Tech.) Program: B.Tech
Examination: SY Semester: III
Course Code: CEC305 and Course Name: Computer Graphics
Duration: 2.5 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 the following terms: 1)Scan Conversion 2)Rendering	2	1	U
ii)	What are the disadvantages of DDA line algorithm	2	2	U
iii)	Rotate a point P(3,2) around the origin in anticlockwise direction by 90°	2	3	AP
iv)	Define following terms 1)Window 2) Viewport	2	4	R
v)	Describe 3D Rotation along Y axis and Z axis with matrix representation	2	5	U
vi)	What are the types of parallel Projection	2	5	U
vii)	Explain Keyframing concept in animation	2	6	U
viii)	Prove that Two Successive Rotations are additive. $R(\Theta 1)*R(\Theta 2) = R(\Theta 1+ \Theta 2)$.	2	3	AP
Q.2	**Solve any four questions out of six.**	16		
i)	Calculate the pixel coordinates of line PQ using the DDA line Algorithm, where P = (2,2) and Q = (10,7)	4	2	AP
ii)	Compare Raster Scan Display and Random Scan Display	4	1	U
iii)	Consider a square P(0,0), Q(0,10),R(10,10), S(10,0). Rotate the square anticlockwise about fixed point R(10,10) by an angle 45^0	4	3	AP
iv)	What is the need of Homogeneous coordinates and give its matrix representation for Translation, Rotation and Scaling	4	4	U
v)	Explain Koch Curve with diagram	4	5	U

vi)	Write short note on Key framing	4	6	U
Q.3	**Solve any two questions out of three.**	16		
i)	Derive Midpoint circle Algorithm	8	2	AP
ii)	How to perform reflection of a 2D object about a line y=mx+b	8	3	AP
iii)	Use Cohen Sutherland line clipping algorithm to clip line segment PQ, P= (10,30) and Q= (80,90) against a window A(20,20), B(90,20), C(90,70) and D(20,70)	8	4	AP
Q.4	**Solve any two questions out of three.**	16		
i)	Given 4 control points (10,10), (15,15), (20,15) and (30,10). Find the points to plot Bezier curve by using step size as 0.2	8	5	AP
ii)	Describe the Depth Buffer Algorithm in detail	8	6	U
iii)	Explain Floodfill Algorithm with 8 connected approach	8	2	U

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