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

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

Feb (2021-2022)

QP-B

(B.Tech.) Program: Computer Engineering / AIDS

Examination: DSY Semester: III

Course Code: 1UCEC305 and Course Name: Computer Graphics

1U AIC305

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 Rendering.	2	1	R
ii)	Derive initial decision parameter equation of midpoint circle algorithm	2	2	Ap
iii)	Derive initial decision parameter equation of Bresenham's line drawing algorithm	**2**	2	Ap
iv)	Solve the transformation operation for rotating the triangle A (0,0), B (1,1), C (5,2) by 45° in anticlockwise direction about origin	2	3	Ap
v)	Define the term window and viewport	2	4	R
vi)	Write the steps of transformation needed for window to viewport transformation	**2**	4	U

vii)	Draw 3D rotation types with matrix representation	2	5	U
viii)	Explain Object space and image space method with example	2	6	U
Q.2	**Solve any four questions out of six.**	**16**		
i)	What are the applications of Computer Graphics	4	1	U
ii)	Write a procedure for Floodfill Algorithm	4	2	Ap
iii)	Derive window to viewport transformation.	4	4	Ap
iv)	Why Homogeneous coordinate are needed to represent 2D transformation, illustrate it with matrix representation	4	3	Ap
v)	Explain 3D Translation and scaling with matrix representation.	4	5	U
vi)	Write short note on Key framing in animation	4	6	U
Q.3	**Solve any two questions out of three.**	**16**		
i)	Apply Cohen Sutherland line clipping Algorithm to clip the line AB (30,60) and (60,25) against the window (Xwmin, Ywmin) = (10,10) and (Xwmax, Ywmax)=(50,50)	8	4	Ap
ii)	Explain 3D Advanced transformations with matrix representation	8	5	Ap
iii)	Derive Midpoint Circle Algorithm	8	2	Ap
Q.4	**Solve any two questions out of three.**	**16**		
i)	Write Back-face detection algorithm in detail	8	6	Ap
ii)	Write Boundaryfill algorithm in detail	**8**	**2**	Ap
iii)	Apply DDA Line Drawing Algorithm to calculate the points between the starting point (5, 6) and ending point (13, 10).	8	2	Ap