

03/6/23

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

May -June 2023

B. Tech. (Artificial Intelligence and Data Science)

Course Code: AIC305

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.

Q. No.	Question	Max. Marks	CO	BT Level
Q. 1	Solve any SIX questions	12		
i	Discuss the representative uses of Computer graphics.		CO 1	U
ii	Compare DDA over BLA.		CO 2	AP
iii	Show that the composition of two rotations is additive.		CO 3	AP
iv	What is Normalization Transformation?		CO 4	U
v	Write advantages and disadvantages of depth buffer algorithm.		CO 6	R
vi	Compare Raster scan and Random Scan display.		CO 1	R
vii	Write different area filling technique.		CO 2	R
viii	Write about Oblique Parallel Projection.		CO 5	R
Q.2	Solve any FOUR questions	16		
i	Explain inside-outside test used in filling algorithm.		CO 2	E
ii	Find the matrix that represents the rotation of an object by 30° about origin? What are the new coordinates of the point P(3, -4) after rotation?		CO 3	AP
iii	Derive Bezier curve. write also the properties of Bezier curve		CO 5	R
iv	Distinguish between flood-fill and boundary-fill algorithms		CO 2	R
v	Describe Principles of Animation.		CO 6	R
vi	Write about window and viewport transformation.		CO 4	R
Q.3	Solve any TWO questions	16		
i	Explain with example scan line fill algorithm.		CO 2	U
ii	Drive the transformation matrix for 2D rotation about arbitrary point.		CO 3	AP
iii	Explain Z buffer technique.		CO 6	AP
Q.4	Solve any TWO questions	16		
i	Give Bresenham's line drawing algorithm. Explain the same with suitable example.		CO 2	AP
ii	Translate the square ABCD whose coordinates are A (0, 0), B (3,0), C (3,3), D (0,3) by 2 units both direction and then scale it 1.5 units in x direction and 0.5 unit in y direction.		CO 3	AP
iii	Write a line clipping algorithm which uses parametric form of equation. Test it for line P_1P_2 where $P_1 = (10, 10)$ and $P_2 = (60, 30)$ against the window with $(X_{wmin}, Y_{wmin}) = (15, 15)$ and $(X_{wmax}, Y_{wmax}) = (25, 25)$.		CO 4	AP