II & IIB KT
AI-DS (01)

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

Nov – Dec 2025
Program: B.Tech. (Artificial Intelligence and Data Science) Scheme IIB
Supplementary Examination: SY Semester: III
Course Code: AIC305 and Course Name: Computer graphics
Date of Exam: 04/12/2025 Duration: 02.5 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 **two** questions out of three: (05 marks each)	10		
a)	Describe the basic uses of computer graphics and give any four applications.		CO1	BT2
b)	Explain the architecture of a raster graphics system with a diagram.		CO1	BT3
c)	Differentiate between raster scan and random scan systems		CO1	BT2
Q 2	Solve any **two** questions out of three: (05 marks each)	10		
a)	Derive Bresenham's line algorithm and apply it for drawing a line from (2,2) to (8,5).		CO2	BT3
b)	What is aliasing? List and explain any two antialiasing techniques		CO2	BT2
c)	Explain the boundary fill and flood fill algorithms with example diagrams.		CO2	BT3
Q.3	Solve any **two** questions out of three. (10 marks each)	20		
a)	i) What are homogeneous coordinates? (3)		CO3	BT4
	ii) Explain translation, scaling, and rotation with matrices and graphical examples. (7)			

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b)	i) Explain the steps and equations for 2D reflection and shear with diagrams. (5)		CO3	BT4
	ii) Demonstrate a composite transformation for an object. (5)			
c)	i) Explain the concept and need of window-to-viewport transformation in 2D viewing. (6)		CO4	BT4
	ii) Describe any one polygon clipping algorithm. (4)			
Q.4	Solve any **two** questions out of three. (10 marks each)	20		
a)	i) Derive 3D rotation matrix for rotation about the Z-axis. (4)		CO5	BT4
	ii) Explain parallel and perspective projections with diagrams. (6)			
b)	) i) What are Bezier and B-Spline curves? Explain their construction and properties. (7)		CO5	BT6
	ii) What is a Koch curve (fractal)? (3)			
c)	) i) Describe the classification of visible surface detection algorithms. (5)		CO6	BT4
	ii) Explain the depth buffer method. (5)			

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