

**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

(B. Tech / ~~M. Tech.~~) Program: AI & DS

Examination: SY Semester: III

Course Code: 1UAIC305 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.

Q. No.	Question	Max. Marks	CO	BT Level
<b>Q 1</b>	<b>Solve any six questions out of eight:</b>	<b>12</b>		
i)	Discuss the representative uses of Computer Graphics		<b>CO1</b>	<b>R</b>
ii)	What is scan conversion?		<b>CO2</b>	<b>R</b>
iii)	Show that the composition of two rotations is additive.		<b>CO3</b>	<b>R</b>
iv)	What is viewing transformation?		<b>CO4</b>	<b>R</b>
v)	Write advantages and disadvantages of depth buffer algorithm		<b>CO6</b>	<b>R</b>
vi)	Compare Raster scan and random scan display		<b>CO1</b>	<b>R</b>
vii)	Specify the disadvantages of DDA algorithm		<b>CO2</b>	<b>R</b>
viii)	What is parallel projection		<b>CO5</b>	<b>R</b>
<b>Q.2</b>	<b>Solve any four questions out of six.</b>	<b>16</b>		
i)	What is aliasing? Explain any one antialiasing technique.		<b>CO2</b>	<b>R</b>
ii)	Find the matrix that represents the rotation of an object by 30degrees about the origin? What are the new coordinates of the point P(2,4) after rotation?		<b>CO3</b>	<b>A</b>

iii)	Derive Bezier curve. Also write the properties of Bezier curve.		CO5	U
iv)	Distinguish between flood fill and boundary fill algorithms		CO2	U
v)	Describe the principles of animation		CO6	R
vi)	What is the difference between window and viewport		CO4	R
<b>Q.3</b>	<b>Solve any two questions out of three.</b>	<b>16</b>		
i)	What are fractals? Discuss two types of fractals		CO5	R
ii)	Explain Sutherland -Hodgman clipping algorithm with help of suitable example		CO4	U
iii)	Using midpoint circle drawing algorithm, plot the circle whose radius is 10 units.		CO02	A
<b>Q.4</b>	<b>Solve any two questions out of three.</b>	<b>16</b>		
i)	Find the transformation matrix that transform the square ABCD whose centre is (2,2) is reduced to half its size, with centre still remaining at (2,2), the coordinates of square are A(0,0), B(0,4), C(4,4), D(4,0). Find the coordinates of the new square.		CO3	A
ii)	Explain Bresenham's line drawing algorithm with help of suitable example		CO2	U
iii)	What is meant by parallel and perspective projections? Derive matrix for perspective projection		CO5	U