MAHATMA GANDHI MISSION **MGM's College of Engineering and Technology, Kamothe, Navi Mumbai**

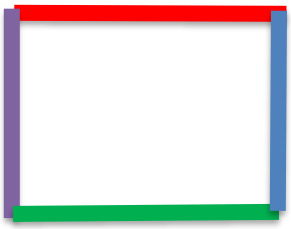
[AY 2021-22]

Branch: Computer Engineering **Semester: III CBCGS (C Scheme)**
Class: SE (A) **Subject: CG**

ASSIGNMENT NO.2

	Question	Module	Bloom's Taxanomy level	Program Indicator (PI)	CO
Q1. Choose Correct Options / Fill in the blanks					
a	The aliasing effect can be minimized by? i. decreasing resolution of the raster display ii. by increasing slope of the line iii. increasing resolution of the raster display iv. by decreasing slope of the line	M2	L2	2.1.2	CO2
b	Pixel _____ is one of the antialiasing techniques.	M2	L1	2.1.2	CO2
c	Which of the following is the correct representation to define 2D point using homogeneous coordinate [Hint: - (Xw, Yw, w)] i. (0,0,0) ii. (4,4,0) iii. (0,0,1) iv. (1.5,1.8,0)	M3	L2	2.1.2	CO3
d	If the scaling factors values of Sx = 1 and Sy = 1 then i. Size of an object remains same ii. Size of an object is increased iii. Size of an object is reduced iv. It slants the shape of an object	M3	L1	2.1.2	CO3
e	The negative values of 'θ' gives _____ rotation.	M3	L2	2.1.2	CO3
Q2. Choose Correct Options/ Fill in the blanks					
a	A circle is drawn at (30,30) with radius = 10. Its mirror image cannot be obtained by? i. Rotation by 90^0 ii. Reflection about Y-axis iii. Translation by $T_x = 60$ and $T_y = 0$ iv. Scaling by $S_x = -1$ and $S_y = 1$	M3	L2	2.1.2	CO3

b	A conceptual line is drawn starting from the particular point and extending to a distance point outside the coordinate extends of the object in direction of X-axis, the line intersects twice with the polygon edges and once with the polygon vertex. Then according to inside outside test, the point lies? i. Outside the polygon ii. Inside the polygon iii. On the boundary of the polygon iv. Cannot say	M2	L3	2.1.2	CO2
c	Which of the following input is accepted only by Boundary Fill method and not by Flood fill method? i. Fill color ii. Background color iii. Edge color iv. Seed pixel	M2	L2	2.1.2	CO2
d	To convert a square into a parallelogram, which transformation is used? i. Scaling ii. X-Shear iii. Y-Shear iv. X-Shear or Y-Shear or both X and Y Shear	M3	L2	2.1.2	CO3
e	First reflect a point about x-axis, then perform a counter clock wise rotation of 90^0, this is equivalent to Reflection about a line ____ .	M3	L2	2.1.2	CO3
Q3. Answer the following questions in brief (20 to 30 words)					
a	Explain homogeneous coordinates in computer graphics.	M3	L1	2.1.2	CO3
b	What is aliasing effect? Discuss any one antialiasing technique.	M2	L2	2.1.2	CO2
c	Compare flood fill and boundary fill algorithm.	M2	L2	2.1.2	CO2
Q4. Answer the following questions in brief (50 to 70 words)					
a	Scale the square ABCD with coordinates A (0,0), B (5,0), C (5,5), D (0,5) by 3 units in x direction and 4 units in y direction.	M3	L1	2.1.2	CO3
b	Derive 2- D composite transformation matrix to reflect the point (x, y) about the fixed point (Xp, Yp)(point other than the origin)	M3	L2	2.1.2	CO3
c	Apply Xshear and Yshear transformation to the square with coordinates P(0,0) , Q(3,0), R(3,-3) and S(0, -3), xshear parameter value and yshear parameter value is 2.	M3	L1	2.1.2	CO3
d	What do you mean by Scan Line polygon fill algorithm? Explain in detail.	M2	L1	2.1.2	CO2
Q5. Think and Answer					
a	What is homogeneous transformation matrix for 2D. Write homogeneous transformation matrix for Translation, Rotation and Scaling in terms of	M3	L2	2.1.2	CO3

	P'=P*T (Where P= Original object matrix, and P'=New object matrix and T= 2D transformation matrix)				
b	Prove that 2D rotations are additive.	M3	L3	2.1.2	CO3
Q6. My Ideas					
a	Derive the composite matrix to scale an object with respect to a fixed point.	M3	L2	2.1.2	CO3
b	 Develop function/procedure to fill color in to the above polygon using 8 connected approach.	M3	L3	2.1.2	CO3