Register Number | | | | | | | | | |

Sri Sivasubramaniya Nadar College of Engineering, Kalavakkam – 603 110

(An Autonomous Institution, Affiliated to Anna University, Chennai)

Department of Computer Science and Engineering

Continuous Assessment Test – II

Question Paper

Degree & Branch	B.E CSE				**Semester**	VII
Subject Code & Name	UCS1703 Graphics and Multimedia				**Regulation:**	2018
Academic Year	2023-2024 ODD	**Batch**	2020-24	**Date**	13.10.2023	FN
Time: 08:10 - 09:40 a.m (90 Minutes)	**Answer All Questions**				**Maximum: 50 Marks**	

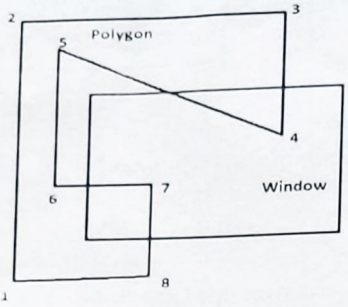
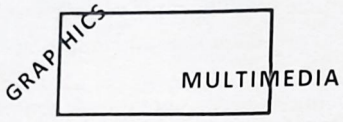
(K1: Remembering, K2: Understanding, K3: Applying, K4: Analyzing, K5: Evaluating)

CO1	Apply the algorithms to manipulate output primitives such as line, circle, ellipse (K3)
CO2	Demonstrate transformations, representations and clipping on 2D objects and map window to viewport transformations (K3)
CO3	Apply three Dimensional concepts like representations, geometric transformations, and projections (K3)
CO4	Understand the working of different illumination and color models used to render an animation scene (K2)
CO5	Understand different types of multimedia file formats, compression techniques and design basic 3D Scenes using Blender (K2)

Part – A (6×2 = 12 Marks)

K1	1. What is exterior clipping? Give an example scenario.	CO2	1.4.1
K2	2. Explain the four cases of clipping a line segment PQ of a polygon using Sutherland-Hodgeman Polygon clipping algorithm.	CO2	2.1.3
K2	3. Illustrate the calculation of the transformed point *(x',y')* in a viewport with co-ordinates *XVmin, XVmax, YVmin, YVmax* given *(x,y)* in the window with co-ordinates *XWmin, XWmax, YWmin* and *YWmax*.	CO2	1.4.1
K3	4. Identify the type of the following 3D object and write its characteristics. 	CO3	1.4.1
K1	A point *P(x,y,z)* is translated using a translation vector *T(a,b,c)*. Write the transformation matrix to find the transformed point *P'*.	CO3	1.1.1 1.4.1
K1	6. List any two three-dimensional display methods and their applications.	CO3	1.4.1

Part – B (3×6 = 18 Marks)

K3	7. Apply Weiler-Atherton polygon clipping algorithm for the following example.  	CO2	1.4.1 2.1.3 13.3.1
K3	8. Apply all three types of text clipping for the strings shown in the figure below.  	CO2	1.4.1 2.1.3 13.2.1
K2	9. Explain in detail how an object is reflected in 3D space. Draw suitable diagrams.	CO3	1.3.1 1.4.1 13.3.1

Part – C (2×10 = 20 Marks)

K3	10. A cube lies in a 3D space with *x,y,z* as the principal axis in a right handed co-ordinate system. An axis A passes through points *P(x1,y1,z1)* and *Q(x2,y2,z2)* and is not parallel to any of the principal axes. Apply rotation on the cube by an angle θ about the axis A. Illustrate the steps and matrices of the transformation.	CO3	1.4.1 2.4.1 13.3.1
	(OR)		
K3	11. Apply the composite transformation for reducing a unit cube to half its volume by keeping the centroid fixed. Use only homogeneous coordinate representation.	CO3	1.4.1 2.4.1 13.3.1
K3	12. Apply Cohen Sutherland clipping algorithm and clip the line *A (5,120) B (50,80)* with respect to the window with *Xleft=10, Xright=60, YBot=10, Ytop=100.*	CO2	1.4.1 2.1.3 13.3.1
	(OR)		
K3	13. Apply the Liang-Barsky algorithm to clip the line *P1(40,15) P2(75,45)* with respect to the window with *(XWmin,YWmin) = (50,10) and (XWmax,YWmax) = (80,40).*	CO2	1.4.1 2.1.3 13.3.1

Prepared By	Reviewed By	Approved By
Course Coordinator	PAC Team	HOD,CSE