VIT
Vellore Institute of Technology

REG.NO.:

School of Computer Science and Engineering (SCOPE)
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

SLOT: B1 +TB1

Programme Name & Branch	**: Integrated M.Tech (5 year), MIC/MID**
Course Code and Course Name	**: CSI 3011 & Computer Graphics and Multimedia**
Faculty Name(s)	**: Dr. Arpan Garai , Dr. Ebenezer Juliet S, Dr. Gayathri S.**
Class Number(s)	**: 1832/1838/1851**
Date of Examination	**: 14th Oct, 2024**
Exam Duration	**: 90 minutes** **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- M- Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply,4 – Analyse,5 – Evaluate,6 – Create)
- Course Outcomes (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)
  CO3 - Perform two and three dimensional transformations and viewing
  CO4 - Describe and apply methods to model and render 3D objects.

Q. No	Question	M	CO	BL
1.	Consider a polygon with vertices A(1,2), B(6,1), and C(5,6). Clip this polygon against a rectangular window with minimum coordinates (x_{min},y_{min})=(2,3) and maximum coordinates (x_{max},y_{max}) = (7,8) using the Sutherland-Hodgman polygon clipping algorithm. What are the coordinates of the clipped polygon?	10	3	3
2.	Consider a 3D surface, A(5,1,2), B(1,3,7), and C(2,8,7). Scale 0.75 with respect to (2,3,1).	10	3	3
3.	There is a straight line in the 3D space given by (3,1,2) and (7,2,1). The center of projection is (11,12,11). What are the coordinates of the endpoints of the line in the view plane given by x/14+y/21+z/16 = 1?	10	3	3
4.	Find the equivalent object vertices in the viewport for a 2D object with vertices A(3,3),B(9,3),C(9,9) and D(3,9) in the world coordinate scene.Write the equation which perform the mapping from window to viewport transformation also assume the boundary coordinates of window and viewport are [(1,1) and (10,10)] and [(-1,-1) and (1,1)] respectively.	10	3	3
5.	a)Consider the shading of polygon meshes with Gouraud and Phong shading. Compare the effects of both in terms of computation cost and image quality. (4 marks)	10	4	4
	b)Suppose you are assigned to show the effects of drawing a 3D object with visible surface detection methods such as Z-buffer and Scan-line. After completing this task, you get inferences from the drawing. Compare the depth calculation of both techniques for objects of overlapping and non-overlapping surfaces. Draw the appropriate illustrations. (6 marks)			