

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code: U4F05

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Computer Science and Design

21UCD405 - COMPUTER GRAPHICS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1. List the categories into which computer graphics operations can be subdivided. CO1-U
2. Using the DDA algorithm calculates the number of steps for the given CO2-App
coordinates starting point (5, 6) and ending point (13, 10)?
3. What is meant by 2D clipping in computer graphics? CO1-U
4. Draw a Line using OpenGL primitives with the coordinates (7,9) and (5,12). CO2-App
5. Mention any two role of polygon in 3D computer graphics CO1-U
6. Draw a triangle with different colors on each of the vertices using OpenGL. CO2-App
7. What role do color and lighting play in the design of animated sequences? CO1-U
8. What is Rendering? CO1-U
9. Mention the platforms supported in Vulkan? CO2-App
10. What is a pipeline in Vulkan? CO1-U

PART – B (5 x 16= 80 Marks)

11. (a) Explain in detail about Bresenham's line generating algorithm. Give CO1-U (16)
an example.
- Or
- (b) Explain Cathode Ray Tube (CRT) monitor and Raster Scan display CO1-U (16)
with its advantage and disadvantage.

12. (a) Use The Cohen Sutherland Algorithm to Clip line P1(70,20) P2(100,10) against a window. Consider rectangular window ABCD , A(50,10), B,(50,40),and D(80,10). CO2-App (16)
- Or
- (b) Let us consider a rectangular window with size (5, 9). The points of the line are (4, 12) and (8, 8). Explain the Liang-Barsky algorithm to clip the line and find the intersection points with the specified window. CO2-App (16)
13. (a) Given a 3D object with coordinate points A(0, 3, 1), B(3, 3, 2), C(3, 0, 0), D(0, 0, 0). Apply the translation with the distance 1 towards the X axis, 1 towards the Y axis, and 2 towards the Z axis and obtain the new coordinates of the object in a pictorial representation and display the Matrix form. CO2-App (16)
- Or
- (b) A point has coordinates in the x, y, z direction i.e., (5, 6, 7). The translation is done in the x-direction by 3 coordinate and y direction. Three coordinates and in the z- direction by two coordinates. Shift the object. Find coordinates of the new position CO2-App (16)
14. (a) Explain the Ray Casting algorithm for visible surface detection. CO1-U (16)
- Or
- (b) Explain the importance of storyboarding in the design of animation sequences? CO1-U (16)
15. (a) Explain the basic architecture of a Vulkan application and how Vulkan handles memory management CO1-U (16)
- Or
- (b) Describe the process of rendering a frame using Vulkan with example. CO1-U (16)