Program/Sem:	T.Y.B.Sc CS – Sem - V	**Course:**	Game Programming
Program Code:	1S00195	**Course Code:**	USCS5042

Duration: 2 ½ Hour 07 NOV 2025 **Max. Marks:** 75

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat diagrams wherever necessary.

Q. 1 Attempt ANY FOUR from the following: [20]

a) Given a light source at (20,20,40) and the illuminated source as (0,10,0) and unit vector n (0,1,0) check the visibility of the object.

b) Differentiate between culling and clipping.

c) Define 3D modeling and rendering and explain different 3D modeling tools.

d) What is back face detection problem? State and explain how dot product is used to calculate back face detection

e) Write a short note on 2D transformations.

f) Explain in detail the concept of perspective projection with suitable diagrams.

Q. 2 Attempt ANY FOUR from the following: [20]

a) Explain the concept of multi-sampling theory. Describe how multisampling is done in Direct3D.

b) What is ursina? Explain game development with ursina with 2D and 3D aspects.

c) What is COM? Explain the texture and resources format in DirectX.

d) Explain the concept of swap chain and page flipping.

e) Explain in detail game engine architecture.

f) Define ModernGL. Explain game development with ModernGL with its 2D and 3D aspects.

Q. 3 Attempt ANY FOUR from the following: [20]

a) Explain the steps to publish the unity project/game.

b) Explain in brief the steps of creating a game in unity with supportive C# script file.

c) Explain conditional statements and loops with example.

d) Explain different rigid body components of unity.

e) Write a short note on animation components.

f) Define scrolling game and list down and explain its key components.

Q. 4 Attempt ANY FIVE from the following: [15]

a) Write a short note on: game development with numpy.

b) Write a short note on: different textures and data resource formats.

c) Write a short note on depth buffering.

d) Define lighting and list down and explain different types of Lights.

e) List and explain types of unity colliders.

f) List and explain steps to handle sound effects in unity.

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