6/5/25 AN

ADDITIONAL CONTROLLER OF EXAMINATIONS ★ AU CHENNAI 600 025

Roll No. | | | | | | | | | | |

B.E. (FT) END SEMESTER EXAMINATIONS – APR / MAY 2025

Computer Science and Engineering
Seventh Semester
CS6026 – GAME DEVELOPMENT
(Regulation 2018 - RUSA)

Time: 3 Hours | Answer ALL Questions | Max. Marks: 100

CO1	Implement simple 3D Graphics applications for Game development
CO2	Use core Game design principles for Game Design
CO3	Analyze Game Engine Architecture and rendering
CO4	Design Simple animations
CO5	Use tools like Unity for game design and development

PART - A (10 x 2 = 20 Marks)

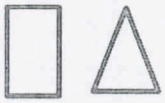
Sl.No.	Questions	Marks	CO	BL
1.	What is a Right Handed Coordinate system?	2	CO1	L1
2.	Identify the different methods/techniques by which 3D models can be created.	2	CO1	L2
3.	Present the 3D rotation transformation matrix for rotation about standard X-axis CCW by 90°.	2	CO1	L2
4.	Mention any 4 popular game genres and give an example for each.	2	CO2	L1
5.	List some general User Experience design principles.	2	CO2	L1
6.	What are the dimensions of the game worlds?	2	CO2	L1
7.	What is a 'Scene graph'?	2	CO3	L1
8.	How are textures applied to 3D objects?	2	CO3	L2
9.	What are 'portals' in a game and how are they represented?	2	CO3	L2
10.	What are the common uses of AI in game design?	2	CO5	L2

PART – B (8 x 8 = 64 Marks)
(Answer any 8 questions)

Sl. No.	Questions	Marks	CO	BL
11.	What is a 'viewing transformation'? How is a viewing coordinate system setup in 3D?	8	CO1	L2
12.	Discuss about some of the common methods of backface culling.	8	CO3	L2

13.	Write about the Phong lighting model.	8	CO3	L1
14.	Derive the transformation matrix for perspective projection transformation and brief the idea behind perspective division.	8	CO3	L2
15.	Write about keyframe animation in detail and Illustrate with a simple example.	8	CO4	L2
16.	Write short notes on storytelling engine and describe the core aspects of interactive story telling.	8	CO2	L1
17.	What is a 'game engine'? Describe the core features and functions with reference to any popular game engine of your choice.	8	CO5	L1
18.	What do you know about 'Mesh Modelling'? Present mesh model for regular tetrahedron assuming your own vertex positions.	8	CO1	L2
19.	Summarize the common techniques used for balancing a game.	8	CO2	L1
20.	What are 'Core Mechanics' in Games? Present the functions of core mechanics and describe its interactions with the other critical architectural components of a game.	8	CO2	L1
21.	What is the significance of Ray Tracing technique? Describe the method.	8	CO3	L2
22.	What do you know about 'level of detail'? Present any method for dynamically altering the level of detail with reference to the viewing direction.	8	CO1	L2

PART – C (2 x 8 = 16 Marks)

Sl.No.	Questions	Marks	CO	BL
23.	Compute the new 2D transformed coordinates of a standard unit square at origin, after the following transformations are performed in that order: ➢ Rotation about origin by 180° CW ➢ Scaling with scaling factors (1, 3)	8	CO1	L3
24.	How are collisions detected? Present any simple method that detects collision between the following two objects. 	8	CO3	L3