Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U8G62

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

One Credit

CSE(Artificial Intelligence & Machine learning)

21UAM862-AI FOR GAME PROGRAMMING

(Regulations 2021)

Duration: 1.30 hours Maximum: 50 Marks

Answer All Questions

PART A - (10 x 1 = 10 Marks)

1. Why decision trees commonly used in AI for 3D games? CO1 -U

   (a) They provide a deep understanding of human-like emotions for characters.

   (b) They are highly effective at generating complex 3D models and Environments.

   (c) They offer an easy to understand rule based approach for decision making that can efficiently guide AI behavior.

   (d) They are primarily used to to enhance the graphics rendering pipeline for 3D visuals.

2. What is the primary purpose of input polling in 3D game programming? CO1 -U

   (a) To optimize graphics rendering

   (b) To track and respond to player inputs in real time

   (c) to manage in game audio playback

   (d) To handle physics calculation efficiently

3. Which technique is commonly used to animate sprites in a game? CO1 -U

   (a) Ray Tracing (b) Particle Simulation

   (c) Sprite Sheet Animation (d) Depth Buffering

4. What is software rendering in computer graphics?

   (a) Rendering that relies on dedicated hardware components like CPUs

   (b) Rendering that is performed entirely by the CPU without specialized hardware acceleration

   (c) The process of converting physical artwork into digital form

   (d) Rendering that only works with vector graphics

5. What is a common application of controller-based animation in interactive media? CO1-U

   (a) Rendering still images

   (b) Creating static 3D models

   (c) Animating characters in response to player actions in video games

   (d) Designing user interfaces without animation

6. In a game engine, what is a "spatial partitioning" technique used for in collision detection? CO1-U

   (a) To allocate memory for game objects

   (b) To divide the game world into smaller sections, making collision checks more efficient

   (c) To synchronize animations with game physics

   (d) To apply textures to 3D models

7. To optimize the performance of a game with a large open world by reducing the rendering workload for objects that are not visible to the player. Which technique should you apply? CO2-App

   (a) Mipmapping (b)) Culling (c) Anti-Aliasing (d) Frame Buffering

8. In the context of game AI, what does 'finite state machine' (FSM) refer to? CO1-U

   (a) A system for rendering game graphics

   (b) A model for defining different states of an AI character and the transitions between these states

   (c) A method for encrypting game data

   (d) A technique for optimizing game performance

9. Which DirectX component is primarily used for handling sound in games? CO1-U

   (a) DirectInput (b) DirectSound (c) Direct3D (d) DirectPlay

10. In a puzzle game, the logic that checks if the player's move leads to a win condition is part of what game logic element? CO1-U

(a) Rendering system (b) Rendering system

(c) Game state management (d) Artificial intelligence (AI)

PART – B (2 x 20= 40 Marks)

11. (a) With a Neat Sketch, explain Multi-threaded Rendering Pipeline for a Real-Time 3D Game programming. CO2 -App (20)

Or

(b) Generate **a** particle system using parametric curves to simulate various effects like fire, smoke, or explosions. CO2 -App (20)

12. (a) Would you optimize the rendering of large-scale outdoor environments in brief. CO2 -App (20)

Or

(b) Apply pacing techniques to enhance the experience of a single-player puzzle game. CO2 -App (20)