

C-8181

Sub. Code

83721

M.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Game Technology

2D ART

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the point where parallel lines appear to converge in perspective drawing?
 - (a) Horizon line
 - (b) Vanishing point
 - (c) Picture plane
 - (d) Eye level
2. Which of the following is a type of perspective drawing?
 - (a) Oblique
 - (b) Isometric
 - (c) Two-point
 - (d) Axonometric
3. What is the term for the central structure line that represents posture in figure drawing?
 - (a) Line of motion
 - (b) Stick line
 - (c) Line of balance
 - (d) Line of action

4. The cylindrical form is commonly used to represent which part of the body?
- (a) Head (b) Arms and legs
(c) Fingers (d) Torso
5. Which of the following is a principle of design?
- (a) Texture (b) Balance
(c) Typography (d) Line
6. Which of the following color schemes uses three equidistant colors on the color wheel?
- (a) Analogous (b) Complementary
(c) Triadic (d) Monochromatic
7. What kind of texture is observed using actual physical surface?
- (a) Simulated texture (b) Abstract texture
(c) Invented texture (d) Tactile texture
8. In environmental studies, what are foreground, midground, and background mainly related to?
- (a) Motion blur (b) Depth and spatial layout
(c) Contrast (d) Line quality
9. Which is NOT a typical style used in concept art?
- (a) Hybrid (b) Cartoony
(c) Realism (d) Minimalism
10. What is the basic unit in a storyboard that represents an individual shot?
- (a) Scene (b) Shot card
(c) Frame (d) Transition

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain with sketches the difference between one-point and two-point perspective.

Or

- (b) Describe the importance of vanishing points and horizon lines in linear perspective.

12. (a) Describe the process of simplifying the human figure into basic 2D shapes.

Or

- (b) Explain the concept of balance and gesture in contour drawing.

13. (a) Discuss the principles of design with suitable visual examples.

Or

- (b) Explain the use and psychological impact of color in visual communication.

14. (a) What are the steps to create texture using live reference?

Or

- (b) Describe scale and proportion in environmental textures with examples.

15. (a) Explain the components of a concept art scene and storytelling elements.

Or

- (b) Write a short script and represent its transition into storyboard frames.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain aerial perspective with examples. How is it different from linear perspective?

Or

- (b) Illustrate and explain the terms picture plane, station point, and vanishing point.

17. (a) Analyze the importance of stick figure and line of action in gesture drawing.

Or

- (b) Illustrate how cylindrical forms help in constructing front and side human views.

18. (a) Evaluate the significance of Gestalt principles in layout design.

Or

- (b) Discuss color theory and elaborate on subtractive and additive models.

19. (a) How would you study different environments to apply accurate textures?

Or

- (b) Describe in detail the relation between material texture and its application in artwork.

20. (a) Create a short concept art scenario for a hybrid environment with visual elements.

Or

- (b) Write a story scene and draw a rough storyboard representing three different views.

C-8182

Sub. Code

83722

M.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Game Technology

ADVANCED 3D DESIGN TECHNIQUES

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What does retopology help to improve in a 3D model?
 - (a) Texture Resolution
 - (b) Edge Flow and Animation Deformation
 - (c) Rendering Speed
 - (d) Lighting Effects

2. Which modifier in 3D software allows duplication of geometry along a path?
 - (a) Bevel
 - (b) Mirror
 - (c) Array
 - (d) Boolean

3. Which attribute does not contribute to photorealistic rendering?
 - (a) Albedo
 - (b) Roughness
 - (c) Hue Shift
 - (d) Normal Map

4. What is the difference between shadow maps and ray tracing?
 - (a) Shadow maps are more accurate
 - (b) Ray tracing is faster
 - (c) Shadow maps are approximation techniques
 - (d) Both are the same

5. What technique is used to animate expressive facial features?
 - (a) IK handles
 - (b) Morph Targets
 - (c) Loop Cuts
 - (d) UV Mapping

6. Which animation principle refers to adding natural delayed motion?
 - (a) Anticipation
 - (b) Follow-Through
 - (c) Pose-to-Pose
 - (d) Squash and Stretch

7. Which compositional technique uses visual guides like spirals or rectangles?
 - (a) Leading Lines
 - (b) Depth of Field
 - (c) Golden Ratio
 - (d) Flat Shading

8. Lighting that contributes to a sense of mood or atmosphere is called:
 - (a) Ambient Lighting
 - (b) Emotional Lighting
 - (c) Bounce Light
 - (d) Key Light

9. Which is a high-resolution surface detailing method in sculpting?
 - (a) Extrusion
 - (b) Boolean Operation
 - (c) Displacement Mapping
 - (d) Subdivision Surface

10. What is the primary purpose of fluid simulations in 3D?
 - (a) Increase texture realism
 - (b) Add organic details ;
 - (c) Simulate real-world liquid motion
 - (d) Smoothen meshes

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the significance of using modifiers in a non-destructive modeling workflow.

Or

- (b) Discuss the importance of edge loops and their influence on animation deformation.

12. (a) Describe the concept of energy conservation in physically based rendering.

Or

- (b) Explain shadow types and their impact on render realism.

13. (a) Illustrate how blend shapes are used-for facial animation with examples.

Or

- (b) Describe anticipation and follow-through principles in character animation.

14. (a) Write short notes on the use of leading lines in composition and scene depth.

Or

- (b) How does lighting influence the emotional tone of a 3D scene?

15. (a) Write a note on the application of procedural texture generation in asset design.

Or

- (b) Differentiate between 3D scanning and 3D reconstruction with use cases.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain the process and importance of retopology in high-detail sculpting workflows.

Or

- (b) Describe various modifier tools used for complex shape development.

17. (a) Discuss the steps involved in creating a physically accurate shader using texture maps.

Or

- (b) Compare and contrast radiosity and global illumination techniques.

18. (a) Describe in detail the process of syncing animation to audio in character animation.

Or

- (b) Explain the role of IK and FK controls in character rigging with examples.

19. (a) Evaluate the use of the golden ratio in advanced 3D scene composition.

Or

- (b) Explain interactive environment lighting for real-time rendering.

20. (a) Discuss the integration of real-world objects into 3D scenes using scanning and reconstruction.

Or

- (b) Write an essay on fluid and smoke simulations and their visual impact.

C-8183

Sub. Code

83723

M.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Game Technology

SPECIALIZED GAME ENGINE - I

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the purpose of the Profiler Window in a game engine?
 - (a) To add sound effects
 - (b) To track performance metrics
 - (c) To create animations
 - (d) To compile scripts

2. Which of the following best represents a “Prefab” in Unity?
 - (a) Sound template
 - (b) Camera tool
 - (c) Reusable game object template
 - (d) Animation curve

3. Which method is used in Unity to detect collisions?
 - (a) On Touch()
 - (b) On Collide()
 - (c) On Collision Enter()
 - (d) On Move()

4. Which of the following allows frame-by-frame animation control in Unity?
(a) Coroutine (b) Raycast
(c) NavMesh (d) Timeline
5. What does GUI stand for in the context of game engines?
(a) General User Interface
(b) Game Unit Integration
(c) Graphical User Interface
(d) Game Utility Interface
6. The camera component in Unity affects which of the following?
(a) Scene lighting (b) Object collisions
(c) Game physics (d) Player view
7. Which of these is used to share in-game information visually to the player?
(a) Terrain (b) HUD
(c) Console (d) Profiler
8. What does “host” refer to in networking for games?
(a) A player who loses the game
(b) A rendering module
(c) A server-client hybrid
(d) A background music tool
9. What is pathfinding typically used for in games?
(a) Managing scores (b) Saving animations
(c) AI navigation (d) Physics simulation
10. Which of the following is essential in optimizing a game build?
(a) Creating more objects
(b) Increasing frame rate
(c) Reducing memory leaks
(d) Adding more textures

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the role of level design and terrain in a 3D game.

Or

- (b) Describe the differences between screen space and world space in 3D engines.

12. (a) Write short notes on Raycasting with an example in Unity.

Or

- (b) Explain the concept of triggers and how they differ from collisions.

13. (a) What is occlusion culling and why is it used in games?

Or

- (b) Explain the use of particle systems and global illumination.

14. (a) Discuss the process of UI design for games with an example.

Or

- (b) Explain HUD design and its role in gameplay.

15. (a) Explain the term "Basic AI mechanics" in 2D games with examples.

Or

- (b) Describe event-driven programming in games.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the components involved in setting up a 3D game environment.

Or

- (b) Write an essay on designing effective level maps in a 3D world.

17. (a) Describe the role of namespaces, collections, and coroutines in scripting.

Or

- (b) Explain navigation, pathfinding, and handling game object behaviors.

18. (a) Write in detail about lighting, shading, and visual effects in 3D games.

Or

- (b) Describe camera movement and cinematics in a real-time game scene.

19. (a) Explain the workflow of building a multiplayer game with server-host structure.

Or

- (b) Discuss the steps involved in designing a cross-platform game.

20. (a) Illustrate particle effects and dialog handling in advanced gameplay.

Or

- (b) Explain with example how AI mechanics enhance player experience.

C-8184

Sub. Code

83726A

M.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Game Technology

GAME ENGINE SPECIALIZATION

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the primary function of a game engine?
 - (a) Creating music
 - (b) Rendering graphics
 - (c) Storing player data
 - (d) Managing network connections

2. Which component is essential for game objects? :
 - (a) Scripts
 - (b) Cameras
 - (c) Textures
 - (d) Animations

3. What is the purpose of collision detection?
 - (a) Improve graphics
 - (b) Prevent objects from overlapping
 - (c) Enhance sound quality
 - (d) Optimize code

4. What does environmental design focus on?
(a) Game physics (b) Level composition
(c) Audio effects (d) Player interactions
5. Which element controls player movement in games?
(a) Shader (b) Camera
(c) Script (d) Terrain
6. What is a key feature of basic AI scripting?
(a) Visual effects (b) NPC behaviors
(c) Sound integration (d) Level design
7. What are shaders primarily used for?
(a) Controlling player movements
(b) Enhancing visual effects
(c) Optimizing game physics
(d) Designing user interfaces
8. Which system manages character animations?
(a) Collision detection (b) State machines
(c) Terrain editor (d) Audio mixer
9. What does a HUD provide?
(a) Visual effects (b) Player information
(c) Background music (d) Terrain details
10. What is the final step in game development?
(a) Testing (b) Design
(c) Deployment (d) Animation

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the importance of game engines in modern game development.

Or

- (b) Discuss the role of basic scripting in creating interactive gameplay.

12. (a) Describe the process of creating and optimizing 3D terrains.

Or

- (b) Explain the principles of environmental design in game development.

13. (a) Discuss the implementation of camera systems in gameplay mechanics.

Or

- (b) Explain how scripting is used to create interactive game elements.

14. (a) Analyze the impact of shaders on game graphics.

Or

- (b) Discuss the integration of particle systems in enhancing visual effects.

15. (a) Explain the process of designing an effective user interface for games.

Or

- (b) Discuss the importance of testing and debugging in game deployment.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Evaluate the evolution and significance of game engines in the gaming industry.

Or

- (b) Discuss the challenges and techniques in asset optimization for game environments.

17. (a) Analyze the role of scripting in creating complex gameplay mechanics.

Or

- (b) Evaluate the effectiveness of basic AI scripting for NPCs and enemies.

18. (a) Examine the impact of advanced graphics techniques on gaming experiences.

Or

- (b) Discuss the role of animation systems in creating lifelike character movements.

19. (a) Explore the challenges in designing intuitive user interfaces and HUDs.

Or

- (b) Discuss the integration of audio elements and their effect on player immersion.

20. (a) Analyze the process and importance of project deployment in game development.

Or

- (b) Discuss strategies for optimizing games across various platforms.

C-8185

Sub. Code

83726B

M.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Game Technology

GAME LEVEL DESIGNING

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the main goal of level design in games?
 - (a) Asset creation
 - (b) Character modeling
 - (c) Enhancing gameplay experience
 - (d) Coding NPCs

2. Spatial design in level design primarily concerns:
 - (a) Enemy AI scripting
 - (b) Terrain modeling
 - (c) Layout and navigation
 - (d) Dialogue recording

3. Which element defines pacing in a game level?
 - (a) Game music tempo
 - (b) Player movement speed
 - (c) Event spacing and rhythm
 - (d) Lighting presets

4. The "Three-Act Structure" in games is a model of: ;
 - (a) Texture creation
 - (b) Story progression
 - (c) Input handling
 - (d) Audio layering

5. Environmental storytelling involves:
 - (a) Only NPC dialogue
 - (b) Environment and props
 - (c) Only cinematics
 - (d) Soundtrack manipulation

6. Which of the following best affects player immersion?
 - (a) Frame rate
 - (b) UI design
 - (c) Narrative atmosphere
 - (d) Sprite resolution

7. Gameplay mechanics refer to
 - (a) Graphics rendering tools
 - (b) Player interaction systems
 - (c) Audio balancing
 - (d) Animation loops

8. Reward systems are used to
 - (a) Confuse the player
 - (b) Slow progression
 - (c) Reinforce engagement
 - (d) Increase bugs

9. Prototyping is useful in level design to
 - (a) Finalize textures
 - (b) Test layout concepts
 - (c) Animate UI
 - (d) Export audio

10. A portfolio in game design showcases
 - (a) Marketing strategies
 - (b) Academic transcripts
 - (c) Level design skills
 - (d) Server logs

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the importance of player-centric design in game level development.

Or

- (b) Discuss how navigation and way finding influence player experience.

12. (a) Write short notes on rhythm and contrast in level layout.

Or

- (b) Explain how lighting and narrative are integrated in world-building.

13. (a) How does atmosphere affect emotional engagement in environmental storytelling?

Or

- (b) Discuss the use of hidden props to enhance storytelling.

14. (a) Write a note on balancing challenges and pacing in game mechanics.

Or

- (b) Explain feedback and reward mechanisms in interactive gameplay.

15. (a) Describe the significance of iteration and playtesting in level design.

Or

- (b) Explain how portfolios help in career building in game design.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the evolution of level design and the concept of difficulty curves.

Or

- (b) Explain spatial layout planning with examples.

17. (a) Explain the "Three-Act Structure" and how pacing is managed in narrative design.

Or

- (b) Illustrate the role of lighting and flow in immersive world-building.

18. (a) Describe emotional design in environments using props and mood.

Or

- (b) Explain how environment influences storytelling in a player-centric system.

19. (a) Analyze how feedback loops and interactivity shape gameplay experience.

Or

- (b) Evaluate the use of pacing and player choice in level progression.

20. (a) Explain the process of level prototyping, optimization and performance testing.

Or

- (b) How can a game design portfolio be built to highlight individual level design expertise?
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C-8186

Sub. Code

83726C

M.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Game Technology

SHADER PROGRAMMING

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which shader type handles the final pixel color?
 - (a) Vertex shader
 - (b) Geometry shader
 - (c) Fragment shader
 - (d) Tessellation shader

2. What does GLSL stand for?
 - (a) General Shader Language
 - (b) Graphic Shader Language
 - (c) Global Shader Language
 - (d) OpenGL Shading Language

3. What is a built-in variable in shaders?
 - (a) User-defined data
 - (b) Predefined data
 - (c) Runtime data
 - (d) Vertex data

4. What does animation in shaders typically involve?
 - (a) Static images
 - (b) Vertex movement
 - (c) Sound effects
 - (d) Text rendering

5. What is a directional light used for?
 - (a) Point source simulation
 - (b) Omni-directional lighting
 - (c) Sunlight simulation
 - (d) Localized lighting

6. How does cartoon shading affect a scene?
 - (a) Increases realism
 - (b) Simplifies textures
 - (c) Creates flat colors
 - (d) Enhances depth

7. Which map provides surface detail without high polygon counts?
 - (a) Alpha map
 - (b) Bump map
 - (c) Cube map
 - (d) Texture map

8. What is the purpose of normal maps?
 - (a) Modify geometry
 - (b) Simulate lighting variations
 - (c) Apply transparency
 - (d) Change color

9. What does edge detection do in an image?
 - (a) Blur details
 - (b) Highlight transitions
 - (c) Smooth surfaces
 - (d) Add depth

10. Which technique helps improve the smoothness of edges?
 - (a) Gaussian blur
 - (b) Anti-aliasing
 - (c) Gamma correction
 - (d) Bloom effect

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe the functions of vertex and fragment shaders.

Or

- (b) Explain the role of vertex attributes in rendering.

12. (a) Discuss the importance of uniforms in shader programs.

Or

- (b) Explain how matrices are used for transformations in graphics.

13. (a) Analyze the effects of different lighting types on a scene.

Or

- (b) Discuss how fog effects contribute to visual depth in graphics.

14. (a) Explain the process of texture mapping using alpha maps.

Or

- (b) Describe the use of normal maps in enhancing texture details.

15. (a) Discuss the role of filters in image processing.

Or

- (b) Explain the impact of bloom effects on visual aesthetics.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Evaluate the importance of shading languages in modern graphics.

Or

- (b) Discuss how shaders transform vertex and fragment data.

17. (a) Analyze the role of animation in creating dynamic visual effects.

Or

- (b) Discuss how depth buffering enhances 3D scene rendering.

18. (a) Examine the principles and techniques of advanced lighting in graphics.

Or

- (b) Discuss the impact of cartoon shading on game visuals.

19. (a) Explore the techniques and benefits of texture mapping in game design.

Or

- (b) Discuss the use of mipmaps and cube maps in creating realistic environments.

20. (a) Analyze the effects of various image operations on digital graphics.

Or

- (b) Discuss the importance of reflection and bump mapping in realism.

C-8187

Sub. Code

83731

M.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

Game Technology

SPECIALIZED GAME ENGINE — II

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the first step in creating a project in a game engine?
 - (a) Importing custom assets
 - (b) Installing the engine
 - (c) Designing the game's interface
 - (d) Configuring the camera system

2. What does the term "static mesh" refer to in a game engine?
 - (a) A 3D model with no animation
 - (b) A lighting effect
 - (c) A material applied to a model
 - (d) A moving object in a game scene

3. What is a terrain material used for in game engines?
 - (a) Creating objects for characters to interact with
 - (b) Designing the background of a game scene
 - (c) Texturing terrain to match real-world surfaces
 - (d) Editing the game's user interface

4. In game engines, which feature is used to add trees, rocks, and other elements to the environment?
 - (a) Matinee
 - (b) Foliage Editor
 - (c) Blueprint
 - (d) Cascade VFX

5. What type of texture is applied to give a 3D model a glowing effect?
 - (a) Diffuse texture
 - (b) Emissive map
 - (c) Normal map
 - (d) Bump map

6. What is the purpose of using particle systems in a game engine?
 - (a) To control lighting effects
 - (b) To simulate physical objects
 - (c) To create effects like fire or smoke
 - (d) To manage game audio

7. How does Blueprint handle AI behaviors in a game?
 - (a) By coding complex algorithms
 - (b) By visually scripting interactions
 - (c) By importing pre-made models
 - (d) By rendering the final game scene

8. What is the primary function of the pause menu in a game?
 - (a) To create levels
 - (b) To pause the gameplay and offer game options
 - (c) To load assets
 - (d) To define player statistics

9. What does the Game Countdown Timer help with in gameplay?
 - (a) Preventing players from restarting the game
 - (b) Timing certain events or actions within the game
 - (c) Loading game levels
 - (d) Displaying the score

10. What is the purpose of adding a fuel bar in a game?
 - (a) To track the player's health
 - (b) To control the game's speed
 - (c) To measure the player's fuel for an ability
 - (d) To manage inventory

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe the process of importing and using a static mesh in a game engine.

Or

- (b) Explain the importance of lighting and material creation in improving the visual quality of a game scene.

12. (a) How do normal maps and emissive maps contribute to enhancing visual realism in a game environment?

Or

- (b) Discuss the process of creating terrain with height maps and their applications in open-world game design.

13. (a) How does Blueprint facilitate the creation of AI characters?

Or

- (b) Describe the process of building a user interface (UI) for a game, including HUD creation and the use of binding.

14. (a) Explain the significance of creating a game over screen and how it enhances user experience.

Or

- (b) Discuss how an ability cooldown system works and its impact on gameplay pacing.

15. (a) Discuss the creation of interactive objects, such as pickup items, in game development.

Or

- (b) Explain the role of environmental effects like fire or explosions in creating dynamic gameplay.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Describe the key steps involved in game project creation, from setting up the engine to initializing the user interface.

Or

- (b) Analyze the importance of geometry editing and its relationship with primitive shapes in game level design.

17. (a) Explain how importing custom assets and creating materials contribute to a game's realism and visual appeal.

Or

- (b) Discuss the role of the foliage editor in game environment design and how it enhances realism.

18. (a) Explore the role of Blueprint in designing AI for enemy characters.

Or

- (b) Discuss the significance of creating pause menus and loading screens in enhancing the player experience.

19. (a) Analyze how Cascade VFX can be used to create special effects in games.

Or

- (b) Explain the process of implementing a checkpoint system in games and its impact on gameplay progression.
20. (a) Discuss the process of creating and implementing a working health system in a game.

Or

- (b) Explain the importance of level decoration and using structural meshes in designing immersive game levels.
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C-8188

Sub. Code

83733

M.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

Game Technology

**EMERGING TECHNOLOGIES IN GAME
DEVELOPMENT**

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the goal of Virtual Reality (VR) systems?
 - (a) To improve physical environment
 - (b) To simulate a virtual environment
 - (c) To enhance real-time gameplay
 - (d) To create physical models

2. Which of the following operations is performed using homogeneous transformations in VR?
 - (a) Rotation of objects
 - (b) Camera tracking
 - (c) Viewport transformation
 - (d) Scaling and translation

3. Which of the following is an example of axis-angle representation in VR?
 - (a) Euler Angles
 - (b) Homogeneous Matrix
 - (c) Rotation matrix
 - (d) Quaternions

4. What is the primary purpose of eye transforms in VR?
 - (a) To create a realistic background
 - (b) To simulate motion in the virtual environment
 - (c) To define the viewer's position in 3D space
 - (d) To calculate object rotation

5. What are the main causes of Tilt Drift in VR tracking systems?
 - (a) Misalignment of sensors
 - (b) Inconsistent rotation axis
 - (c) Inaccurate lighting
 - (d) Camera frame rate

6. Which of the following is a common tracking method in AR?
 - (a) Homogeneous transformation
 - (b) Image acquisition and feature matching
 - (c) Quaternion multiplication
 - (d) Motion sensors

7. In IoT, which technology enables the seamless connection of devices to each other?
- (a) Blockchain
 - (b) Machine-to-Machine communication
 - (c) Edge computing
 - (d) Data analytics
8. Which is a key feature of smart grids enabled by IoT?
- (a) Autonomous vehicle systems
 - (b) Improved energy storage
 - (c) Real-time energy management
 - (d) Real-time environmental tracking
9. Which AR tracking method uses vision-based data to align virtual objects with real-world environments?
- (a) Sensor-based tracking
 - (b) Vision-based tracking
 - (c) Hybrid tracking
 - (d) Image Acquisition
10. In the context of depth perception in VR, which factor plays a major role in how realistic the virtual environment feels?
- (a) Camera lens
 - (b) Eye movement and tracking
 - (c) Rotation matrix
 - (d) Lighting effects

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is the importance of VR transformations like Pitch, Yaw, and Roll in achieving realistic user experiences?

Or

- (b) Discuss how matrices aid in the manipulation and movement of objects in VR systems.

12. (a) Explain the concept of Quaternions and how they simplify rotation calculations in VR.

Or

- (b) Describe how homogeneous transformations are applied in computer graphics for rendering 3D objects.

13. (a) Discuss the challenges associated with depth perception in VR.

Or

- (b) Explain how eye movement contributes to enhancing the depth perception in VR.

14. (a) Describe the role of feature extraction and matching in AR applications.

Or

- (b) Explain how geometric verification plays a role in ensuring the accuracy of AR features.

15. (a) Discuss the significance of machine-to-machine communication in IoT, and its role in creating smart environments.

Or

- (b) Explain the concept of Sensor Cloud in IoT and how it contributes to real-time data analysis.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) How does the process of viewing transformations enhance user experience in VR? Describe its components such as eye transforms and viewport transformations.

Or

- (b) Explain the concept of axis-angle representations in 3D transformations and their application in VR systems.

17. (a) How does motion perception affect the realism of a VR system? Discuss how it is achieved through proper tracking.

Or

- (b) Analyze the techniques used to address yaw drift in VR tracking systems.

18. (a) Explain the concept of perspective n-point problem in VR and how it is solved for accurate tracking.

Or

- (b) Discuss the role of filtering in improving camera tracking in VR systems.

19. (a) Describe the methods used for feature extraction in AR, such as SIFT and SURF.

Or

- (b) Discuss the different tracking techniques in AR and their effectiveness in different scenarios.

20. (a) Discuss the IoT system's role in smart grids and its potential impact on energy distribution.

Or

- (b) Explain how IoT enhances machine-to-machine communication, enabling seamless interactions between connected devices.
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C-8189

Sub. Code

83736A

M.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

Game Technology

ADVANCED GAME PROGRAMMING

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which design pattern ensures that a class has only one instance and provides a global point of access to it?
(a) Factory Method (b) Prototype
(c) Singleton (d) Builder
2. Which of the following design patterns is used to create an interface that unifies multiple interfaces of different classes?
(a) Adapter
(b) Proxy
(c) Composite
(d) Bridge

3. The Factory Method design pattern is primarily used to
 - (a) Create objects without specifying their concrete class
 - (b) Share objects among multiple classes
 - (c) Optimize memory allocation
 - (d) Store game states efficiently

4. The Observer pattern is commonly used to
 - (a) Maintain consistency between dependent objects
 - (b) Create multiple instances of a class
 - (c) Optimize game rendering
 - (d) Manage object lifecycles

5. Which of the following patterns helps to structure game updates efficiently?
 - (a) Game Loop
 - (b) Chain of Responsibility
 - (c) Prototype
 - (d) Iterator

6. The Decorator pattern allows
 - (a) Modification of an object's behavior dynamically
 - (b) Creation of complex object hierarchies
 - (c) Direct manipulation of object properties
 - (d) Creation of immutable objects

7. Which of the following is a sequencing pattern in game development?
- (a) Flyweight
 - (b) Double Buffer
 - (c) Singleton
 - (d) Abstract Factory
8. In the Space Invaders game, which system controls enemy movement?
- (a) Observer
 - (b) Enemy System
 - (c) Proxy
 - (d) Object Pool
9. The Component pattern is primarily used to
- (a) Enhance the reusability of game entities
 - (b) Manage collision detection
 - (c) Define a single instance of a class
 - (d) Optimize memory storage
10. The Power Up Management system in a game primarily deals with:
- (a) Managing character upgrades
 - (b) Handling visual effects
 - (c) Collision detection
 - (d) Entity rendering

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the importance of design patterns in game development.

Or

- (b) Discuss the role of OOP principles in design patterns.

12. (a) Describe the Factory Method pattern with a gaming example.

Or

- (b) Explain the Singleton pattern and its significance in gaming.

13. (a) How is the Observer pattern used in game event handling?

Or

- (b) Discuss the Mediator pattern with an example from game development.

14. (a) Explain the Game Loop pattern and its role in game optimization.

Or

- (b) Describe the Entity Component System pattern and its significance in game design.

15. (a) How is Power Up Management implemented in breakout games?

Or

- (b) Discuss the similarities between Breakout and Space Invaders in terms of design patterns.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain the impact of design patterns in game optimization with examples.

Or

- (b) Describe the importance of encapsulation and inheritance in game programming.

17. (a) How do Structural Design Patterns improve game development?

Or

- (b) Discuss the role of the Composite pattern in gaming.

18. (a) Explain the importance of the Proxy pattern in game performance enhancement.

Or

- (b) Discuss the differences between Strategy and State patterns with gaming examples.

19. (a) Analyze the importance of Spatial Partitioning in large-scale games.

Or

- (b) Describe the significance of Data Locality in game optimization.

20. (a) Compare and contrast the implementation of Enemy System and Power Up Management in Space Invaders.

Or

- (b) How does Collision Control work in Breakout games?
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