C–8502	Sub. Code
	82623

B.Sc. DEGREE EXAMINATION, APRIL 2023

Second Semester

Game Programming

ALGORITHMS AND DATA STRUCTURES

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Notion Algorithm.

2. Define “Little Omega”.

3. What is exhaustive key search?

4. What is bubble sort?

5. What is Presorting?

6. What is the average case running time of an insertion sort algorithm?

7. What is Memorization?

8. What are the worst case complexities of binary search tree?

9. Who coined the term backtracking?

10. Define the term “rd mask”.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Describe the fundamentals steps to solve an algorithm.

Or

(b) Explain in detail about Quick sort algorithm.

12. (a) How would you differ between selection sort and Bubble sort? Explain in detail.

Or

(b) How the binary search works? Explain in detail.

13. (a) How does the Heap sort work? Explain in detail.

Or

(b) What is space complexity of insertion sort algorithm? Explain in detail.

14. (a) How to solve Dynamic programming problem? Explain in detail.

Or

(b) Illustrate the Warshall's and Floyd's algorithm.

15. (a) Describe the Hamiltonian circuit problem.

Or

(b) Explain the Travelling salesman problem.

Part C

(3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the Mathematical analysis of Recursive and Non-Recursive algorithm.

Or

(b) Write detail about Binary tree traversal.

17. (a) Explain detail about the Depth first search and Breadth first search.

Or

(b) Write the functions of heads and heap sort.

18. (a) Illustrate the decrease and conquer.

Or

(b) Explain and analyze the Assignment and Knapsack problem.

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C–8503	Sub. Code
	82624

B.Sc. DEGREE EXAMINATION, APRIL 2023

Second Semester

Game Programming

GAME MATHS AND PHYSICS

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is number system?

2. What is affine algebra?

3. What are the different kinds of matrices?

4. What are derivatives?

5. Classify rigid body.

6. State Newton's 2nd law.

7. What is stress and strain?

8. What is implicit surface deformation?

9. Compare fluid and gases.

10. What is 3D model?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the important of linear equation systems.

Or

(b) Discuss the coordinate systems.

12. (a) Briefly discuss the advanced vector operations.

Or

(b) Explain the basic vector operations.

13. (a) Describe the importance of momenta and energy.

Or

(b) Explain the rigid body motions.

14. (a) Briefly discuss mass spring systems.

Or

(b) Explain briefly on free form deformation.

15. (a) Describe conservation law in detail.

Or

(b) Discuss the fluid flow model in detail.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail the algebra number systems.

Or

(b) Explain the mathematical analysis of linear equations.

17. (a) Explain the classical approach involved in game physics.

Or

(b) Explain the Legrangian dynamics with suitable example.

18. (a) Explain the various deformable body concepts.

Or

(b) Describe in detail the simplified 3D model with suitable example.

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C–8504	Sub. Code
	82625

B.Sc. DEGREE EXAMINATION, APRIL 2023

Second Semester

Game Programming

2D GRAPHICS PROGRAMMING

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Bitmap.
2. What is Graphics Library?
3. What is buffer?
4. Define view port.
5. What is translate matrix?
6. What is rotate matrix?
7. Define Animation.
8. What frame in animation?
9. What is rendering?
10. Define Particle system.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the significant of Graphics Libraries.

Or

(b) What is game loop? Explain in detail.

12. (a) Explain the uses of Viewport.

Or

(b) Describe the functions of Draw primitives.

13. (a) What is Matrix? Explain detail about the Transformation matrix.

Or

(b) Explain the functions of MVP Matrix.

14. (a) Write the uses of sprite sheets.

Or

(b) Explain the basic features of level editor.

15. (a) Explain the need for physics in games.

Or

(b) Explain the Attributes of particle system.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Write an essay about structure of Graphics program.

Or

(b) Write detail note Frame based animation Vs Time based animation.

17. (a) Elaborate Fixed Vs Programmable pipeline.

Or

(b) Write the detail note on Time based character movement.

18. (a) Explain the Various camera operations in detail.

Or

(b) Explain detail about the best practices of graphical renders in games.

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C–8505	Sub. Code
	82632

B.Sc. DEGREE EXAMINATION, APRIL 2023.

Third Semester

Game Programming

3D GRAPHICS PROGRAMMING

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Physical trackball

2. Zoom

3. BSP

4. 3D Particle Effects

5. Phong shading

6. Shadow mapping

7. Skinned mesh

8. Pixel Lighting

9. Mouse picking

10. Skybox

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) How do you make a 3D Map in Blender?

Or

(b) What does the backface culling do in graphics?

12. (a) What is meant by collision detection?

Or

(b) Write about the function of occlusion culling.

13. (a) Illustrate the role of Ray casting.

Or

(b) Describe the basic camera movements?

14. (a) Does mipmapping improve performance?

Or

(b) How do you calculate specular lighting?

15. (a) What is the best anisotropic filtering for good animation performance?

Or

(b) Discuss the process to create a multiple textured terrain.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the process of using multiple texture maps for terrain textures.

Or

(b) Describe the process in which the speed for the blender cycle can be improvised?

17. (a) Elaborate the process of rendering to texture.

Or

(b) Explain backface culling in blender? Explain backface culling in blender.

18. (a) Discuss the four basic techniques of animation?

Or

(b) How does anti alaising aid in rendering?

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C–8506	Sub. Code
	82634

B.Sc. DEGREE EXAMINATION, APRIL 2023.

Third Semester

Game Programming

GAME ENGINE – I

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Explain the basic difference between 2D and 3D in gaming environment?

2. What are the different game objects?

3. What are the various stages in level game design?

4. Define mesh in game design.

5. What is ray casting?

6. List the various types of joints in game engine.

7. What are the properties of camera?

8. Define memory optimization in gaming development.

9. What are the elements in UI layout?

10. What is host and spawn in game design?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) What are the various steps in Importing a model?

Or

(b) Write a brief description on various mesh components.

12. (a) Explain rendering mesh and its application in detail.

Or

(b) Write a note on Scripting concepts with examples.

13. (a) List the difference between navigation and path finding.

Or

(b) Explain the Unity Navmesh system in detail.

14. (a) Elaborate the camera properties with examples.

Or

(b) Define memory optimization and various checks in memory leaks.

15. (a) Explain basic UI layout in detail.

Or

(b) Write a note on networking concepts.

Part C

(3 × 10 = 30)

Answer **all** questions.

16. (a) Discuss in detail with real time examples on difference between 2D and 3D game with all parameters.

Or

(b) Explain the steps in setting up a game environment and discuss on profiler window features.

17. (a) How will you work and perform controlling in animation? Explain with examples.

Or

(b) Define rendering, lighting and shading with real time cases.

18. (a) How will you design a game in UI and what are the basic layouts in game designing?

Or

(b) Define scripting and basic 3D models in detail.

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C–8507	Sub. Code
	82642

B.Sc. DEGREE EXAMINATION, APRIL 2023.

Fourth Semester

Game Programming

WEB GAME PROGRAMMING

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is HTML?

2. Why canvas needed for web game development?

3. What arrays?

4. What is call back functions?

5. What is scrolling effect?

6. What is parsing?

7. What are the listeners?

8. Enlist the game paly programming.

9. What is debug?

10. What is 2D box?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain HTML types.

Or

(b) Describe the application of media tag.

12. (a) Explain various types of arrays.

Or

(b) Describe the web development framework.

13. (a) Write down the JSON parsing.

Or

(b) How to develop a sprite sheet.

14. (a) Describe the background scrolling effect.

Or

(b) How to design a game with user interface?

15. (a) Describe physics programming.

Or

(b) Explain the debug in web game development.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Describe in detail the HTML tables and images.

Or

(b) Describe in detail Java Script Expressions and Operators.

17. (a) Discuss methods and application of canvas in detail.

Or

(b) Explain the process of UI Designing with suitable example.

18. (a) Describe in detail about collision detection.

Or

(b) Explain the pre-defined functions in detail.

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C–8510	Sub. Code
	82655C

B.Sc. DEGREE EXAMINATION, APRIL 2023.

Fifth Semester

Game Programming

EMERGING TRENDS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is bird-eye view?

2. What are rotations?

3. What are quaternions?

4. What is viewing transform?

5. What is lighting?

6. What is yaw drift correction?

7. Enlist the types of sensors.

8. What is feature matching?

9. What is actuation?

10. What is BCI?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Describe the sensation and perception of bird-eye view.

Or

(b) Describe the birds-eye view hardware in detail.

12. (a) Briefly describe the multiplying rotation.

Or

(b) Write short note on viewport transformation.

13. (a) Describe the light refraction in detail.

Or

(b) Explain the motion perception.

14. (a) Describe the geometric verification.

Or

(b) Compare vision and hybrid tracking.

15. (a) Describe the machine-to-machine communication.

Or

(b) Describe the smart grid.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the uses of birds-eye software for game technology.

Or

(b) Explain the uses of birds-eye hardware for game technology.

17. (a) Describe in detail the importance of game simulation in game model.

Or

(b) Discuss the various types of sensors used in game technology.

18. (a) Explain the various communication protocols.

Or

(b) Describe the sensor networking in detail.

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C–8511	Sub. Code
	83023

B.Sc. DEGREE EXAMINATION, APRIL 2023.

Second Semester

Graphic Design

DESIGN STUDY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the purpose of design in human life?

2. Define target audience,

3. What is colour harmony?

4. Define Colour wheel.

5. What is typeface anatomy?

6. Define typography.

7. Brief on dynamic designs.

8. Define colour blending.

9. What is layout?

10. What is the role of grids?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the important characteristics of design.

Or

(b) Write down the importance of design in human life.

12. (a) Describe triads and tetrads.

Or

(b) State the role of warm and cool colours.

13. (a) Write an essay on Format conversion.

Or

(b) What is the importance of space in graphic design?

14. (a) Write notes on:

(i) Vector graphics

(ii) Raster graphics

Or

(b) Describe Color manipulation.

15. (a) Explain the different stages of design process.

Or

(b) What are the important parts of a page layout?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain Colour theory.

Or

(b) Describe creative vs stereo type solutions.

17. (a) List out the various attributes of color.

Or

(b) Enumerate addictive and subtractive model.

18. (a) Explain colour psychology.

Or

(b) Discuss the importance of selecting appropriate fonts.

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