

N.B. : (1) Question No. 1 is **Compulsory**

(2) Attempt any four questions from Q.Nos 2 to 7

(3) Assume suitable data if necessary.

(4) Figures to the right indicate full marks.

1. a) Write a program in C++ to capture the mouse and draw lines. 10
 b) What are Sprites and why are they used ? Write a basic Sprite class and explain the various properties in it. ? 10

2. a) What are the phases in Gameplay development ? Explain the process, people involved in each phase ? 10
 b) Describe Blue-Sky research in detail 05
 c) Define Middleware ? Describe the popular 3D engines currently in use ? 05

3. a) Explain in detail the Cleanup process to be followed during and after the game exit. 10
 b) What are tokens ? Explain tokenization in Pong game specifying interaction matrix and the sequence of events that occur when a goal is scored. 10

4. a) State the design patterns that are commonly used in game design and explain any four with examples. 05
 b) Discuss the seven golden principles of effective game design . 05
 c) Give a practical example of :- 05
 - i. Using Inheritance over Containment
 - ii. Using Containment over Inheritance
- d) Describe the game build process 05

5. a) Explain why game development has to be tier-based ? Describe the application of Tier-based approach to architecture design ? 10
 b) What is Source Control? Explain in brief the different functionalities provided by Source Control System. 10

6. a) Explain the various platforms on which game can be deployed on? What are the Advantages and disadvantages of each of these platforms? 10
 b) Describe the 3D graphics pipeline in detail. Explain the various inputs to this pipeline and the operations performed on it by graphics pipeline. 10

7. Write Short note on. (Any four) ; 20
 - a. PeekMessage method
 - b. Hard and soft architectures
 - c. Chroma Key
 - d. Scene nodes
 - e. Stack memory Vs Heap memory
 - f. Audio Formats