Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14CS3063** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ARTIFICIAL INTELLIGENCE FOR GAMES** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | |  | Elaborate the following steering behaviors with neat diagrams and pseudo codes.  i) Seek and flee.  ii) Pursue and Evade.  iii) Collision Avoidance. | CO1 | 20 |
|  | | **(OR)** | | | |
| 2. | |  | Design a ‘Haunted House’ game by presenting a memorable adventure that takes place in a mansion filled with a variety of terrifying monsters using the components of AI Model. | CO1 | 20 |
|  | |  |  |  |  |
| 3. | |  | Describe the steering behavior that takes a whole path as a target and explain how it calculates the position of a target based on the current location and the shape of the path. | CO1 | 20 |
|  | | **(OR)** | | | |
| 4. | | a. | Illustrate the three different jumps that are difficult to mark up using jump points. | CO2 | 10 |
| b. | Construct the graph for the following nodes and edges  Nodes={S, A, B, C, D, E}  Edges/Connections = {(S, A) : 6, (S, B) : 15, (A, C) : 6,  (A, D) : 12, (B, D) : 3, (B, E) : 15, (D, C) : 9, (D, E) : 6}  Assume that S is the start node and E is the goal node.  Apply Dijkstra algorithm to find minimum cost path from S to E. | CO2 | 10 |
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| 5. | |  | Imagine you have an AI-controlled police vehicle moving along a busy city road. The car needs to travel as quickly as possible when pursuing a criminal or trying to reach a designated roadblock. Assume there is not enough room to drive between two lanes of traffic, you have to stay in one lane. The pathfinding task for the police car is to decide when to change lanes. Derive a pathfinding algorithm that can cope with a continuous problem as mentioned. | CO2 | 20 |
|  | | **(OR)** | | | |
| 6. | |  | Show the schematic of a rule-based system and survey the properties such as database matching, condition–action rules and forward/ backward chaining. | CO2 | 20 |
|  | |  |  |  |  |
| 7. | |  | Elaborate the concept of transposition table by explaining hashing game states, Zobrist keys, replacement strategies and the issues of transposition table. | CO2 | 20 |
|  | | **(OR)** | | | |
| 8. | |  | Generate the strategy for the board games Tic-Tac-Toe of two players using minimax algorithm with alpha beta pruning. | CO3 | 20 |
|  |  | | **Compulsory**: |  |  |
| 9. |  | | Draw the AI architecture for a shooter game and explain about decision making, pathfinding and perception in shooter games. | CO3 | 20 |