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



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

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **17CS3033** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ARTIFICIAL INTELLIGENCE FOR GAMES** | **Max. Marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Draw the basic structure of Artificial Intelligence model used in a game and describe the components of the model. | CO1 | 10 |
| b. | Write short notes on terms used in games   1. Hacks 2. Heuristics 3. Algorithms | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Write the pseudo code to implement kinematic seek behavior which takes as input the character’s and their target’s static data and calculates the direction from the character to the target and requests a velocity. | CO1 | 10 |
| b. | Draw and explain the basic structure of movement algorithms. | CO1 | 10 |
|  |  |  |  |  |
| 3. |  | Write a pseudocode for the following steering behaviours.   1. Seek 2. Arrive | CO1 | 20 |
| **(OR)** | | | | |
| 4. | a. | Write and explain the pseudo code for align that tries to match the orientation of the character with target. | CO2 | 10 |
|  | b. | Describe suitable collision avoidance techniques used in games, if the number of characters are all heading in roughly the same direction. | CO2 | 10 |
|  |  |  |  |  |
| 5. |  | Write short notes on the following formation motion.   1. Fixed formations 2. Scalable formations | CO2 | 20 |
| **(OR)** | | | | |
| 6. |  | Write short notes on the following components in rule based systems;   1. Data base matching 2. Condition-Action rules 3. Data base rewriting rules | CO4 | 20 |
|  |  |  |  |  |
| 7. |  | Carry out the A\* algorithm on the following graph and write down the queue at each step.  Assume S as a start state and G as a goal state.  1  3  3  3  1  1  12  2 | CO3 | 20 |
| **(OR)** | | | | |
| 8. | a.  b. | Explain decision tree with example.  Analyze the chances of buying computer using decision tree algorithm with the given data set.  **Rec Age Income Student Credit\_rating Buy**  R1 <=30 High No Fair No  R2 <=30 High No Excellent No  R3 31 to 40 High No Fair Yes  R4 >40 Medium No Fair Yes  R5 >40 Low Yes Fair Yes  R6 >40 Low Yes Excellent No  R7 31 to 40 Low Yes Excellent Yes  R8 <=30 Medium No Fair No  R9 <=30 Low Yes Fair Yes  R10 >40 Medium Yes Fair Yes  R11 <=30 Medium Yes Excellent Yes  R12 31 to 40 Medium No Excellent Yes  R13 31 to 40 High Yes Fair Yes  R14 >40 Medium No Excellent No | CO4  CO4 | 5  15 |
|  | | **Compulsory**: |  |  |
| 9. |  | Draw and explain the artificial intelligence architecture for real time strategy games. | CO6 | 20 |