**H**      Roll No. ..............................

# TCS–421

## B. TECH. (CSE)
## (FOURTH SEMESTER)
## MID SEMESTER EXAMINATION, 2021
### FUNDAMENTAL OF STATISTICS AND ARTIFICIAL INTELLIGENCE
### Time : 1½ Hours
### Maximum Marks : 50

**Note :** (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) Define an Expert System. Is Expert System and Intelligent System same ? Discuss the various basic entities of an Expert System and the role of these entities in the designing process of an Expert System. Provide the suitable example to justify your answer.

10 Marks (CO6)

OR

(b) How is Artificial Intelligence different from Human Intelligence ? Discuss a simple case study and identify how you can train a human having a zero knowledge about the problem and also discuss the steps for the training of the machine and the challenges to train the machine. Provide the suitable example for explanation.            10 Marks (CO5)

2. (a) Discuss A* algorithm briefly. Apply the A* algorithm to solve the above problem.

            10 Marks (CO5)

| 2 | 8 | 3 |
|---|---|---|
| 1 | 6 | 4 |
| 7 | — | 5 |

(Initial State)

| 1 | 2 | 3 |
|---|---|---|
| 8 | — | 4 |
| 7 | 6 | 5 |

(Goal State)

OR

(b) How are uniformed search algorithms different from informed search algorithms ? Discuss the difference between the working approach of breadth first search and best first search using the suitable example.        10 Marks (CO5)

3. (a) Let start with the initial node value is 1 and for each state K has two successors numbers 2K and 2K+ 1.

   (i) Draw the state space representation (stop if the node value is 15)

   (ii) Let suppose the goal state is 11. List the order of node from Initial state to Goal state for Breadth first search and Depth first search.        10 Marks (CO5)

OR

(b) Discuss the role of AI in health sector. In Indian rural are how, AI will play an important role in health sector.

                            10 Marks (CO5)

4. (a) (i) Discuss is Depth first search is a special case of best first search. Justify your answer with proper example why yes or no.

(ii) Discuss is Breadth first search is a special case of best first search. Justify your answer with proper example why yes or no.

10 Marks (CO5)

OR

(b) Discuss Hill climbing search in detail. What are the drawbacks of Hill climbing algorithm ?                10 Marks (CO6)

5. (a) Define an Agent. Discuss the different types of agents with suitable example.

10 Marks (CO6)

OR

(b) How is Depth Limited Search different from Depth First Iterative Deepening method ? Is there any improvement as compared to DFS in these algorithms ? Justify your answer.       10 Marks (CO5)