JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2023

B. Tech-VII Semester (CSE/IT)

COURSE CODE (CREDITS): 20B1WCI731 (2) MAX. MARKS: 15

COURSE NAME: Artificial Intelligence

COURSE INSTRUCTORS: Dr. Nancy Singla, Dr. Diksha Hooda MAX. TIME: 1 Hour

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Note: *(a) All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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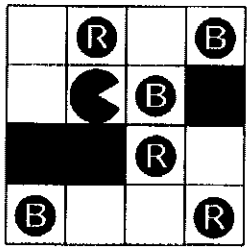
Q1. What are the four parameters for specifying the task environment? Explain the parameters by considering the task of Automated Taxi Driver. [3] [CO1]

Q2. Foodie Pacman: There are two kinds of food pellets, each with a different color (red and blue). Pacman is only interested in tasting the two different kinds of food: the game ends when he has eaten 1 red pellet and 1 blue pellet (though Pacman may eat more than one of each pellet). Pacman has four actions: moving up, down, left, or right, and does not have a "stay" action. There are K red pellets and K blue pellets, and the dimensions of the board are N by M. [4] [CO1]



K=3, N=4, M=4

(a) Give an efficient state space formulation of this problem. Specify the domain of each variable in your state space.

(b) Assuming Pacman starts the game in position (x,y), what is the initial state?

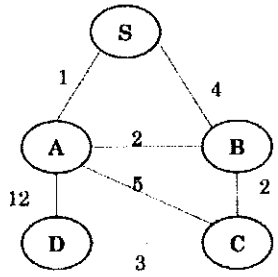
(c) Define a goal test for the problem.

(d) Is the following heuristic admissible, give reasons.

The smallest Manhattan distance to any remaining pellet.

Q3. Differentiate between Depth First Search (DFS), Depth Limited and Iterative-Deepening DFS techniques? [3] [CO1]

Q4. For the search space shown below, find the optimal path from S to D using the heuristic values defined in table. [5] [CO1]



Node	Heuristic Value
S	7
A	6
B	2
C	1
D	0