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MIT WORLD PEACE UNIVERSITY | PUNE
TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

PRN: 1032210755

Mid Semester Examination

Oct 2023

CET2007B - Artificial Intelligence and Expert System

Schedule ID: 21577

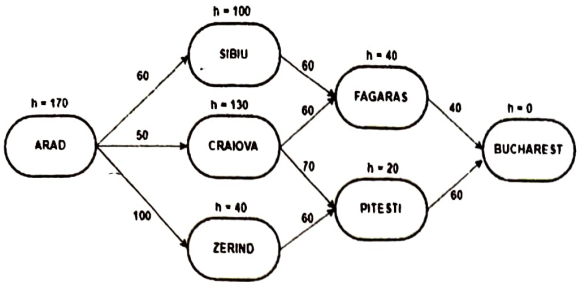
Faculty/School	Faculty of Engineering and Technology	**Term**	Semester V
Program	TY BTech CSE	**Duration**	**1 Hours 30 Minutes**
Specialization		**Max. Marks**	**50**

Instructions to the Candidate:

1. Write the PRN on the top right-hand corner of the question paper.
2. Draw neat diagrams.
3. Assume suitable data, if necessary.
4. Solve any 5 questions.

Section 1 (5 X 10 Marks)
Answer any 5 questions

1	Provide differentiation along with respective examples of any 3 of the following: a) Fully Observable vs. Partially Observable Environments b) Deterministic vs. Stochastic Environments c) Static vs. Dynamic Environments d) Single-Agent vs. Multi-Agent Environments e) Continuous vs. Episodic Environments	**10 marks**	CO1	Understanding
2	Explain any two search strategies from the following: a) Depth Limited Search (DLS) b) Iterative Deepening Search (IDS) c) Bidirectional Search Write the tree traversal for the following search space tree using each search technique, i.e. Breadth First Search (BFS), Depth First Search (DFS), DLS for Level 1, IDS A / | \ B C D /\ /\ E F G H Note: Consider root node A is at level 0.	**10 marks**	CO2	Applying

3	 What is A* algorithm? Mention its advantages and disadvantages. Find the optimal path from Arad to Bucharest using A* algorithm. g(n) is the cost for reaching one node to an adjacent node while h(n) is the estimated cost to reach Bucharest from the current node "n". g(n) is mentioned as the weight of the edge while h(n) is mentioned as the weight of Node. Write the solution in steps.	**10 marks**	CO2, CO3	Applying
4	Consider the following scenario: You are a mountaineer trying to reach the summit of a mountain, but you cannot see the entire landscape at once. Instead, you have a limited field of view and can only assess the steepness of the terrain in your immediate surroundings. In your quest to reach the summit, you use a strategy that involves always moving in the direction that seems steepest uphill based on your current perspective. Describe this strategy and explain how it relates to problem-solving techniques in the field of artificial intelligence. What is this approach commonly known as in the context of AI, and what are its drawbacks and its solutions?	**10 marks**	CO1, CO2, CO3	Analysing
5	Explain the constraint satisfaction problem and mention its different components. Solve the following Cryptarithmatic Constraint Satisfaction Problem (Note: Each unique alphabet has to be assigned with a unique number, and the equation should be mathematically correct) M A T H + M A T H ---------- H A B I T	**10 marks**	CO2	Creating
6	Express the following any 5 statements in Predicate Logic using relevant quantifiers: a) No one likes rainy days. b) Every student who studies hard gets good grades. c) A book is either a novel or a non-fiction book. d) In every company, there is an employee who is the CEO. e) Some fruits are red. f) Every bird can fly. g) Some students passed the exam.	**10 marks**	CO3	Applying

END OF QUESTION PAPER