Course Code: ARD203/ARI203 | Subject: Introduction to Artificial Intelligence
Max. Marks: 30 | Duratione:1.5 Hrs

Note: Q1 is compulsory and attempt any four questions from remaining five questions.

Q1)a) List any five application of Artificial Intelligence.

b) Define the term heuristic. Suggest any heuristic function to solve 8-Puzzle problem.

c) Differentiate predicate logic and propositional logic.

d) What is rational agent? and explain bounded rationality?

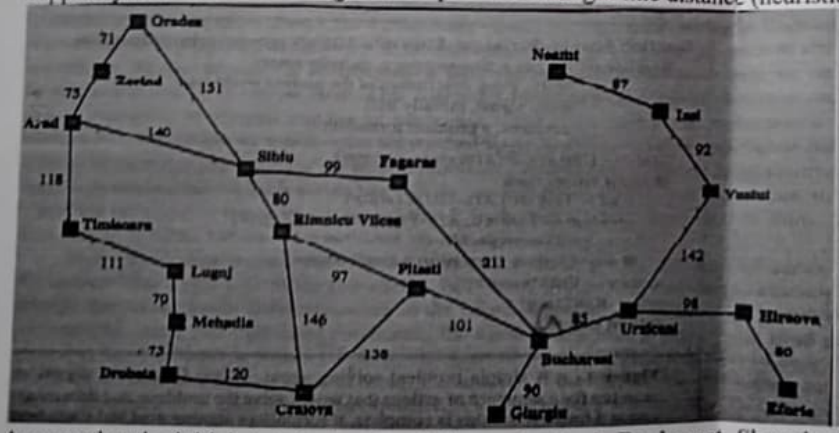
Q2. Define Turing test. Explain the four approaches to AI with example.

Q3. Explain Hill climbing algorithm. What are the challenges and how to overcome it with hill climbing algorithm?

Q4) Solve water jug problem and show all the state space explode. Given two jugs of 7 lt and 5 lt of capacity bring 4 lt of water in 7 lt jug. Assume there is no marking in respective jugs and use fill, empty, pour and transfer operation.

[Common Data question Q5 and Q6]

Suppose you have the following search space and straight line distance (heuristic values) to **Bucharest** :



Arad	366	Mehadia	241
Bucharest	0	Neamt	234
Craiova	160	Oradea	380
Drobeta	242	Pitesti	100
Eforie	161	Rimnicu Vilcea	193
Fagaras	176	Sibiu	253
Giurgiu	77	Timisoara	329
Hirsova	151	Urziceni	80
Iasi	226	Vaslui	199
Lugoj	244	Zerind	374

Assume that the initial state is **Arad** and the goal state is **Bucharest**. Show how following search strategies would create a search tree to find a path from the initial state to the goal state:

Q5) Best First Search

Q6) A* search strategies

At each step of the search algorithm, show which node is being expanded, and the content of *fringe*. Also report the eventual solution found by each algorithm, and the solution cost.