DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter Examination – 2022

Course: B. Tech. **Branch: Electronics Engineering** **Semester: V**

Subject Code & Name: BTEXOE505B:: Artificial Intelligence and Machine Learning

Max Marks: 60 **Date: 14.02.2023** **Duration: 3 Hr.**

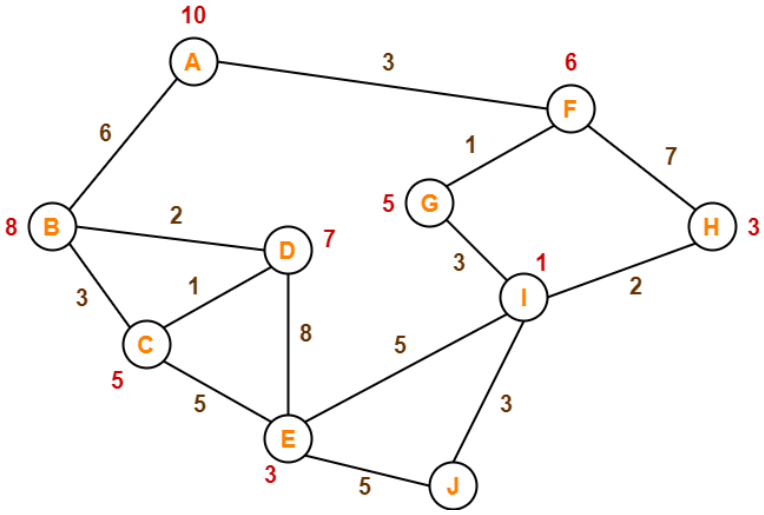
Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve any *two* of the followings.**		**12**
A)	What is Artificial Intelligence? What are the Types of Environments in AI.	(L1/CO1)	**6**
B)	Explain the Agents and their types in AI.	(L1/CO2)	**6**
C)	Explain the water Jug problem as a state-space search.	(L1/CO1)	**6**
Q.2	**Solve any *two* of the followings.**		**12**
A)	Define State Space Search. Explain in detail.	(L2/CO2)	**6**
B)	Explain Breadth-first search (BFS) and Depth first search (DFS) with an example. List down the advantages and disadvantages of both.	(L1/CO3)	**6**
C)	Explain the working of Greedy-Best-first search algorithm? Give advantages, disadvantages and applications.	(L1/CO1)	**6**
Q. 3	**Solve any *two* of the followings.**		**12**
A)	Write and explain hill-climbing and steepest hill-climbing search algorithms in artificial intelligence.	(L2/CO2)	**6**
B)	Write and explain the A* algorithm with advantages and disadvantages.	(L2/CO3)	**6**
C)	What is Mini-max search for game playing? Explain the Min Max algorithm	(L1/CO1)	**6**

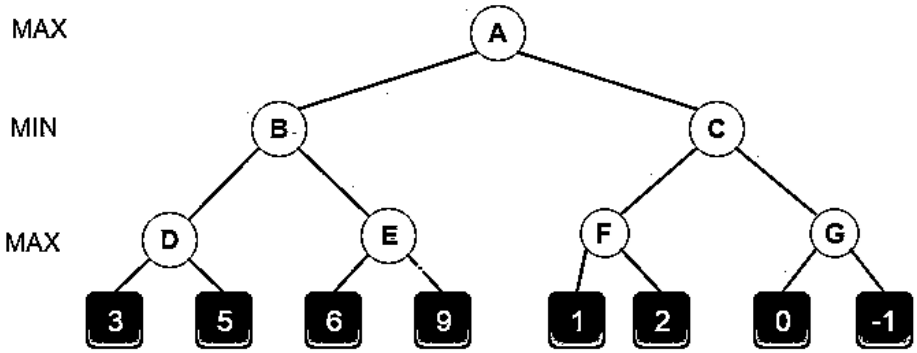
Q.4 **Solve any *two* of the followings.** **12**

A) Consider the following graph (L1/CO2) **6**



The numbers written on edges represent the distance between the nodes. The numbers written on nodes represent the heuristic value. Find the most cost-effective path to reach from start state A to final state J using A* Algorithm

B) Explain the alpha-beta search algorithm. Also solve the following example using Alpha beta pruning. (L3/CO3) **6**



C) Write a note on Forward State-Space Search and Backward State-Space Search with an example. (L1/CO1) **6**

Q. 5 **Solve any *two* of the followings.** **12**

A) Differentiate between Parametric and Non-Parametric Methods in AI (L2/CO2) **6**

B) What is Ensemble Learning? What are the types of ensemble learning? (L2/CO3) **6**

C) Comment on finding the hypothesis in supervised machine learning algorithm from given data with an example. (L2/CO2) **6**

***** End *****