

TIT-502

1010

Odd Semester Examination 2018-19

B.TECH.(IT) (SEMESTER-V)

ARTIFICIAL INTELLIGENCE

Time: 03:00 Hours

Max Marks :100

Note: Attempt all the questions.

1. Attempt any four questions of the following: [5×4=20]

- a) What is the difference between intelligence and artificial intelligence?
- b) Describe the Turing machine for artificial intelligence and justify its validity from a modern standpoint.
- c) Differentiate between A* algorithm and AO* algorithm. Which one is selected for a problem?
- d) Solve the crypt arithmetic problem using constraints satisfaction search procedural

FOUR+FOUR=EIGHT

e) Explain the concept of means-ends analysis procedure.

2. Attempt any four questions of the following: (5×4=20)

- a) How reinforcement learning differs from supervised learning?
- b) Explain Apriori algorithm? What are the major shortcomings of Apriori algorithm which made it Non-useful in large databases?
- c) Describe the naïve Bayesian method of classification.

- d) Differentiate the feed forward and feedback system. Provide diagrams and suitable examples
- e) Briefly describe ant colony optimization(ACO).
3. Attempt any two questions of the following: [10x2=20]

(a) Using the facts

- (i) Rama was a man.
- (ii) Rama was a saint
- (iii) All saints are Hindu
- (iv) Ravana was a ruler
- (v) All Hindus were loyal to ravana or hatred him.
- (vi) Everyone is loyal to someone.
- (vii) People only try to assassinate rulers they are not loyal to.
- (viii) Rama tried to assassinate ravana.
- (ix) All men are people.

Covert the following sentences into predicate calculus.

Answer the question "Did Rama hate ravana?"

- (b) Define the concept of water jug problem. There are two jugs 4 liter and 3 liter capacities. Neither has any marking made on it. There is a pump issued to fill the jugs with water. How can we obtain exactly 2 liter of water in the 4 liter jug.
- (c) Consider trying to solve the 8 puzzle using the hill climbing heuristic. Can you find a heuristic function that makes this work? Make sure it works on the following example:

Start Goal

1	2	3
8	5	6
4	7	

1	2	3
4	5	6
7	8	

4. Attempt any two questions of the following: [10x2=20]

- (a) Write a script for enrolling as a student for an examination.
- (b) construct CD representation of the following:
 - (i) John begged Mary for a pencil.
 - (ii) Vinod stirred his coffee with a spoon.
 - (iii) Reji took the book off Jim.
 - (iv) On my way home, I stopped to fill my car with petrol.
 - (v) I heard stranger music in the woods.
 - (vi) Drinking beer makes you drunk.
 - (vii) John killed Mary by strangling her.
- (c) Define learning. Explain its types of learning with example. Also explain robotic agents? How they reduce human efforts?

5. Attempt any two questions of the following: [10x2=20]

- (a) What are the fundamental characteristics of an expert system? What are the difference between expert system and conventional program?
- (b) List the advantage of rule –based expert systems. What are their disadvantages?

- (c) Three missionaries and three cannibals find themselves on one side of a bridge. They have agreed that they would all like to get to the other side. But the missionaries are not sure what else the cannibals have agreed to. So the missionaries want to manage the trip across the bridge in such a way that the number of missionaries on either side of the bridge is never less than the number of cannibals on that side. The only boat available holds only two people at a time. How can everyone get across the bridge without the missionaries risking being eaten? Prove it using resolution.

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