1T01875 - T.E. Computer Science & Enginering (Artificial Intelligence & Machine Learning) (Choice Based) (R-2019 'C' Scheme) SEMESTER - V / 48893 - Artificial Intelligence

QP CODE: 10038167 DATE : 29/11/2023

[Time: 3 hrs] **[Total Marks: 80]**

Note : 1. Question 1 is compulsory
2. Answer any three out of remaining question
3. assume suitable data where required

Q1	Attempt any **4**	**[20]**
[A]	Explain problems faced by Hill Climbing algorithm.	**[05]**
[B]	Write PEAS descriptor for Shopping for used AI books on the Internet.	**[05]**
[C]	Write a program in Prolog to create a family tree.	**[05]**
[D]	Draw and explain architecture of Expert System.	**[05]**
[E]	Discuss different types of environments for Intelligent Agents.	**[05]**
Q2		**[20]**
[A]	Explain A algorithm with an example. Also discuss its performance.	**[10]**
[B]	What are the different types of agents? Explain Goal based agent with a diagram.	**[10]**
Q3		**[20]**
[A]	What is formulation of a problem? Formulate 8-Puzzle problem in terms of following components: initial state, actions, successor function, goal test and path cost.	**[10]**
[B]	Define chromosome, selection, fitness function, cross over and mutation as used in genetic algorithm. Explain the working of genetic algorithm.	**[10]**
Q4		**[20]**
[A]	"As per the law, it is a crime for an American to sell weapons to hostile nations. Country A, an enemy of America, has some missiles, and all the missiles were sold to it by Robert, who is an American citizen." Prove that "Robert is criminal." Using forward and backward Chaining.	**[10]**
[B]	What is planning in AI? Explain partial order planning with an example.	**[10]**

Q5 **[20]**

[A] Write first order statements for following **[10]**

(i) Every dolphin is Mammal

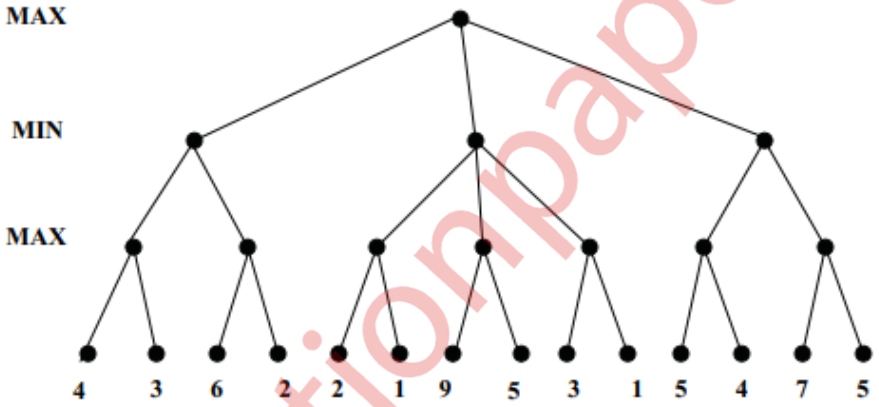
(ii) No purple mushroom is poisonous.

(iii) Every gardener loves sun.

(iv) You can fool someone all the time.

(v) All Romans were either loyal to ceaser or hated him.

[B] Explain Alpha-beta pruning algorithm. Apply alpha beta pruning on the following example considering the first node as MAX. **[10]**



Q6 **[20]**

[A] Explain Bayesian Belief Networks with an example. **[10]**

[B] Explain different types of learning in AI. **[10]**

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