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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (R, S) / S7 (PT) (R,S) Examination November 2024 (2019 Scheme)

Course Code: CST401

Course Name: ARTIFICIAL INTELLIGENCE

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1 Explain the significance of Turing test in the field of Artificial Intelligence. (3)

2 Discuss any three applications of Artificial Intelligence (3)

3 How do you evaluate the performance of a search algorithm? (3)

4 Explain the concept of Uniform cost search. (3)

5 Explain node consistency in CSP. (3)

6 Discuss Minimum Remaining Value (MRV) Heuristic in CSP. (3)

7 What do you mean by Conjunctive Normal Form? (3)

8 Define Unification with an example. (3)

9 Explain the term entropy in Decision tree classification algorithm. (3)

10 Explain any three applications of Machine Learning. (3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11 a) With the help of diagram Explain Goal based reflex agent in Intelligent Systems (8)

b) Define PEAS representation. Illustrate the PEAS representation of the following agent types (i) Part Picking Robot (ii)Interactive English tutor. (6)

OR

12 a) Explain the various task environment types with examples. (8)

b) Explain the components of a well-defined AI problem with an example. (6)

Module II

13 a) Illustrate A* algorithm with an example. Also explain the optimality of A* algorithm. (8)

b) Discuss any two uninformed search strategies (6)

OR

14 a) Explain the working of Best First Search with an example. (8)

b) Discuss the iterative deepening search with an example. (6)

Module III

15 a) Solve the following crypt arithmetic problem by hand, using the strategy of backtracking with forward checking and least-constraining-value heuristics. (8)

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b) Explain the Min Max Search with an example. (6)

OR

16 a) Discuss AC-3 algorithm with example. (8)

b) Explain Alpha Beta pruning with an example. (6)

Module IV

17 a) Consider the following facts in a Knowledge Base: (10)

a. John likes all kind of food.
b. Apple and vegetable are food
c. Anything anyone eats and not killed is food
d. Anil eats peanuts and still alive
e. Harry eats everything that Anil eats.

Prove by Resolution that :**John likes Peanuts**

b) Explain Entailment with an example. (4)

OR

18 a) Consider the given knowledge base:The law says that it is a crime for an American to sell weapons to hostile nations. The country Nono, an enemy America, has some missiles, and all of its missiles were sold to it by Col. West, who is an American.Using (i) forward chaining and (ii)Backward Chiaining Prove that **Col. West is a criminal** (10)

b) Discuss Modus ponens and Modus Tollens with examples. (4)

Module V

19 a) Explain any 4 four methods to prevent overfitting in Machine Learning. (8)

b) Differentiate between classification and regression. (6)

OR

20 a) Explain Decision Tree with an example. (8)

b) Illustrate the different types of Learning. (6)

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