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Roll No ....

MCA-401

M.C.A. IV Semester

Examination, May 2018

Artificial Intelligence and Applications

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) What do you mean by AI? What are the important AI techniques?
   b) What is LISP? Discuss Lambda expressions and function definition in LISP.

2. a) Find a good state space representation for the missionaries and cannibals problem.
   b) Explain the purpose of production system with examples. Also explain the various types of production system.

3. a) Write down the A* algorithm with its merits and demerits.
   b) Differentiate between depth first and breadth first search.

4. a) State and prove unification algorithm. Why is unification required?
   b) Translate the following statements in clause form. Show that the predicate support (Notebook, Cup) is true using resolution.
   i)   If x is on the top of y, y support x
   ii) If x is above y and they are touching each other, x is on top of y
   iii) A cup is above a notebook
   iv) A cup is touching a notebook

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5. a) Explain the semantic nets and make the partitioned semantic net for the following sentence.

   "Every dog in town has bitten the constable"

   b) Express the following sentence as conceptual dependency structure.

   "Sam gave Mary a box of candy".

6. a) Make the augmented transition network for the following sentence.

   "The dog likes a man"

   b) Write down the minimax algorithm and explain with the help of an example.

7. a) What are the components of a planning system? Differentiate between goal-state and non-linear planning.

   b) Explain probabilistic reasoning and derive Bayes theorem.

8. Write short notes (any three)
   a) Expert system
   b) Learning
   c) AND/OR graph
   d) Frame
   e) Script

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