Total No. of Questions :5]   [Total No. of Printed Pages :2

Roll No ....

MCA-401
MCA IV Semester
Examination, June 2016
Artificial Intelligence and Applications

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) Discuss the characteristics of AI applications.
   b) Give basic list manipulation functions.
   c) Differentiate between iteration and recursion.
   d) Explain the functions and function declaration in LISP.

   OR

   Discuss the issues associated with artificial intelligence and also explain the types of problems that can be resolved use AI techniques.

Unit - II

2. a) Define the effect of heuristic accuracy on performance.
   b) What is constraint satisfaction? Problem?
   c) Explain branch and bound techniques.
   d) What is problem reduction? Explain A*algorithm and its applications.

   OR

   Explain the algorithm for steepest hill climbing.

Unit - III

3. a) What is semantic network?
   b) How knowledge is represented in predicate logic?
   c) How uncertain knowledge can be represented? Show with example.
   d) Explain the unification algorithm used for reasoning under predicate logic with an example.

   OR

   Consider the following facts and represent them in predicate form:
   i) There are 500 employees in ABC company.
   ii) Employee earning more than Rs.5000 pay tax.
   iii) John is a manager in ABC company.
   iv) Manager earns Rs.10,000.
   Convert the facts in predicate form to clauses and then prove by resolution: "John pays tax".

Unit - IV

4. a) What is passing?
   b) Differentiate between syntactic analysis and semantic analysis.
   c) Explain the components of planning system.
   d) Describe alpha-beta pruning and give the other modifications to the min-max procedure to improve its performance.

   OR

   Why natural language understanding is hard? Explain the components of natural language processing.

Unit - V

5. a) What is Expert system?
   b) Give the full specification of Bayesian network.
   c) How static learning differ from reinforcement learning.
   d) What is MYCIN? Explain the structure of expert system. Discuss the major challenges in expert system field.

   OR

   What is learning? Give the general structure of learning system. What do you mean by learning agents? Explain learning by induction briefly.

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