Registration No: | | | | | | | | | | |

Total Number of Pages: 2 **MCA**
MCC501

5th Semester Regular/Back Examination – 2015-16
ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
BRANCH(S): MCA
Time: 3 Hours
Max Marks: 70
Q.CODE:T173

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: (2 x 10)

a) What are the components of problem solving agent.
b) Define the performance measures of a searching strategy?
c) How many numbers of nodes will be generated in BFS for depth is 3 and branching factor is 4?
d) Write the admissibility and consistency properties of heuristic functions used in A* search.
e) What is unification? Give an example.
f) Prove that P=>Q and ~Q logically derives ~P.
g) Represent the following sentences in First order Logic.
   i) Every person who buys a policy is smart.
   ii) There is an agent who sells policies to people who are not insured.
h) What is Maximum Expected Utility principle.
i) What is Explanation-based learning? Write the entailment constraints for it.
j) Write the components of an expert system.

Q2 . What is uninformed search? Explain the Breadth first Search algorithm along with its performance measures and compare it with other uninformed search strategies. (10)

Q3 What is an intelligent agent? Discuss the different types of agents with their advantages and drawbacks. (10)

Q4 a) Explain the components and inference rules of First Order logic. (5)
b) Explain the A* search algorithm and solve 4-Queen problem using it. (5)

Q5 a) Explain the method of representing of a planning problem with a suitable example. (5)
b) What is a learning agent? Explain the structure and components of learning agent. (5)

Q6 a) Discuss the architecture of an Expert system. (5)
b) What is decision theory? Explain the structure of a decision theoretic agent. (5)

Q7 a) Draw a parse tree for the sentence “John goes to school” (5)

b) Using forward chaining in First order logic, prove that (5)
John is criminal from the KB consisting of the following facts.
It is crime for students to copy projects.
All students copy projects.
John is a student.

Q8 Write Short Notes (Any Two) (5 x 2)

a) Decision tree
b) Knowledge Based agent
c) Conditional planning
d) Information Retrieval