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Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

II SEMESTER M.TECH (COMPUTER SCIENCE AND ENGINEERING)
END SEMESTER EXAMINATION, MAY 2016

SUBJECT: **ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING (CSE-504)**

REVISED CREDIT SYSTEM

Time: 3 Hours DATE: 12-05-2016 MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** questions.

1.A. Explain the following approaches of artificial intelligence.
(i)The Cognitive modelling approach (ii)The Laws of Thought approach 4M

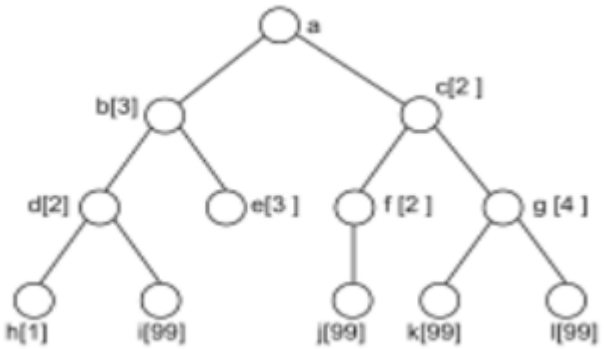
1.B. Define the term 'Artificial Intelligence'. What is Soft Computing? 3M

1.C.What is main goal of soft computing? What do you mean by the terms approximation, uncertainty and imprecision? 3M

2.A. Explain model based and goal based agent models with the help of taxi driving example. 5M

2.B. Give initial state, goal state and operators and state space search for the following unstructured problem:
"Three missionaries and three cannibals are on the left bank of a river. There is one boat which can hold one or two people. Find a way to get everyone to the right bank, without ever leaving a group of missionaries in one place outnumbered by cannibals in that place". 4M
2.C. Distinguish between Blind search and Heuristic Search approaches. 1M

3.A Compare the Breadth-first search tree and the Depth- first search algorithms and features. 4M
3.B Consider the following example to demonstrate the working of hill climbing and best first search algorithms. 4M



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3.C Illustrate working of the Mini max procedure. 2M

4. A. What is meant by predicate in predicate logic? Give Examples to show the use of predicate using quantifiers. 4M

4.B. Illustrate partitioned semantic network with quantifier. 2M

4.C Write algorithm for forward chaining mechanism and discuss with an example. . 4M

5.A Discuss Bayes decision model for a ten class case. How to compute an average probability of error. 4M

5. B Explain learning model and mention two types of learning in neural networks. 4M

5. C. Distinguish between learning, classification and clustering process of machine learning systems. 2M

6. A. Consider four objects and two attributes to illustrate unsupervised learning using k-mean clustering process to discuss the natural grouping of objects. . 4M

6.B. Write a basic genetic algorithm. How genetic algorithm can be used in neural networks and fuzzy systems optimization? 4M

6. C. Illustrate with example the triangle representation of a fuzzy set of a fuzzy inference system? 2M