FACULTY OF INFORMATICS
B.E. 3/4 (IT) II - Semester (Main) Examination, June 2014

Subject : Artificial Intelligence

Time : 3 Hours   **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.
PART – A (25 Marks)

1   Define Artificial Intelligence.   (2)
2   Define Admissibility of A* algorithm.   (2)
3   Show that A → (B ᴠ C) → D is a tautology or not by using a truth table.   (2)
4   Define non-monotonic system and state how they are implemented.   (3)
5   State Dempster-Shafer theory.   (3)
6   Show that the statement "If it is humid then it will rain and since it is humid today it will rain" is a valid argument.   (3)
7   Write a short note on supervised and unsupervised learning.   (2)
8   Define Parsing.   (2)
9   Write a short note on α - β pruning.   (3)
10 Write a short note on decision tree learning and define entropy.   (3)

PART – B (5x10=50 Marks)

11 Three missionaries and three cannibals want to cross a river. There is a boat on their side of the river that can be used by either one person or two persons. How should they use the boat to cross the river in such a way that cannibals never outnumbers missionaries on either side of the river. If the cannibals out number the missionaries, then missionaries will be eaten. How can they all cross over without anyone being eaten? Describe the state space and production rules to find the solution.   (10)
12 Consider the following English sentence "Anything anyone eats is called food. Mita likes all kinds of food. Burger is a food. Mango is a food. John eats pizza. John eats everything mita eats". Translate these sentences into formulae in predicate logic and then to clauses. Use resolution refutation to prove "Mita likes Pizza and Burger".   (10)
13 (a) Explain the architecture of expert systems in detail.   (5)
    (b) Write a short note on Bayesian belief networks.   (5)
14 (a) Explain Multi layered feed forward networks in detail.   (5)
    (b) Write the Back-propagation training algorithm and explain in detail. (5)
15 (a) Write in detail about any two parsers used in NLP.   (5)
    (b) Draw the parse tree structure for the following sentence. "The boy goes to the school".   (5)
16 (a) Explain in detail about constraint satisfaction problem.   (5)
    (b) Explain how knowledge is represented using Frames.   (5)
17 Write short notes on the following:
    (a) Radial Basis function networks   (4)
    (b) Hill climbing   (3)
    (c) Semantic networks   (3)

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