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14SCS24

Second Semester M.Tech. Degree Examination, June/July 2016
Artificial Intelligence and Agent Technology

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. Define : i) Artificial Intelligence ii) Agent. **(04 Marks)**

b. Briefly explain the task domains of AI. **(06 Marks)**

c. i) What is an AI technique? Explain with an example.
ii) What are AI problem characteristics? Explain each with an example. **(10 Marks)**

2 a. There are two water jugs of 6-litre and 8-litre capacity. Neither has any measuring marker. There is a tap that can be used to fill the jugs with the water. Indicate how 8-litre jug can be filled half. Solve this water-jug problem by giving complete set of production rules and state space tree. **(10 Marks)**

b. Differentiate agent function and agent program. Give the structure and agent program for model based reflex agent. **(10 Marks)**

3 a. Write the procedure for hill-climbing search technique. Explain with a suitable example. Discuss the problems in hill-climbing and the ways of dealing with these problems. **(08 Marks)**

b. Explain the different approaches for knowledge representation with an example for each. **(08 Marks)**

c. What are the issues in knowledge representation? **(04 Marks)**

4 a. What do you mean by clause? Describe the steps in converting a sentence in first-order predicate logic (FOPL) into clausal form with an example. **(10 Marks)**

b. Consider the following sentences:
i) Every bird sleeps in some tree.
ii) Every loon is a bird, and every loon is aquatic.
iii) Every tree in which any aquatic bird sleeps is beside some lake
iv) Any thing that sleeps in anything that is beside any lake eat fish.
Convert the above sentences into wffs in FOPL. Show that the conclusion "Every loon eat fish" using resolution principle. **(10 Marks)**

5 a. What are non-monotonic reasoning systems? Explain the logic for implementing the same along with issues associated with it. **(10 Marks)**

b. State the Bayes theorem and illustrate how it helps in reasoning under uncertainty. **(05 Marks)**

c. Write a note on truth maintenance system. **(05 Marks)**

6 a. What are the advantages of Bayesian networks? Explain with an example. **(06 Marks)**

b. Briefly explain : i) Rule based systems ii) Certainty factors. **(06 Marks)**

c. Discuss the way reasoning is done using, i) Fuzzy logic ii) Dempster shafer theory. **(08 Marks)**

7 a. What are frames? Write the frame structure for birthday party. **(06 Marks)**

b. What is a semantic net? Write the semantic net for cricket team. **(08 Marks)**

c. List and explain the primitive conceptual categories and actions with an example for each. **(06 Marks)**

8 a. State the optimal decision strategy in games. Write the minimax procedure and explain with an example. **(08 Marks)**

b. Distinguish the supervised, unsupervised and reinforcement learning strategy. **(06 Marks)**

c. Explain how decisions are made in decision tree with an example. What are the issues to be addressed by decision tree in order to apply it for real world applications? **(06 Marks)**

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.