Reg. No. | | | | | | | | | | | | |

Question Paper Code : 31412

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Seventh Semester

Computer Science and Engineering

080230042 – ARTIFICIAL INTELLIGENCE

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish performance and utility function with respect to measuring an agent behavior.

2. Develop a PEAS description of the task environment of mobile dictionary agent.

3. State the advantages of simulated annealing.

4. Define CSP.

5. Decide whether the following sentence is valid, unsatisfiable or neither: Fire => Smoke.

6. Represent the following sentence in first-order logic: Only one student took Greek in spring 2001.

7. Define supervised learning.

8. What are happy graphs?

9. What is the need for syntactic analysis?

10. Why are grammars to be augmented?

PART B — (5 × 16 = 80 marks)

11. (a) Develop the characteristics (observable, deterministic. episodic, static, discrete) of task environments for

(i) Crossword puzzle agent (4)

(ii) Taxi driving agent (4)

(iii) Medical diagnosis (4)

(iv) Interactive english tutor. (4)

Or

(b) Does a finite state space always lead to a finite search tree? How about a finite state space that is a tree? Can you be more precise about what types of state spaces always lead to finite search trees? (16)

12. (a) (i) Describe the learning of an agent in online search method. (8)

(ii) Explain alpha - beta pruning with an example. (8)

Or

(b) (i) Explain online search agent working using depth first exploration. (8)

(ii) Explain memory bounded heuristic search. (8)

13. (a) Discuss the syntax and semantics of first order logics. (16)

Or

(b) Discuss the architecture of utility-based learning agent, with a sample application. (16)

14. (a) In the recursive construction of decision trees, it sometimes happens that a mixed set of positive and negative examples remains at a leaf node, even after all the attributes have been used. Suppose that we have p positive examples and n negative examples, show that the solution by DECISION-TREE LEARNING, which picks the majority classification, minimizes the absolute error over the set of examples at the leaf. (16)

Or

(b) Explain why the EM algorithm would not work if there were just two attributes in the model rather than three. (16)

15. (a) Describe the applications of machine learning in a medical diagnosing application. (16)

Or

(b) Describe probabilistic language models with suitable examples. (16)

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