Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 41159

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

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. Define : Logic.

2. Provide the PEAS description of the task environment for software agent.

3. State the advantages of simulated annealing.

4. Define : CSP.

5. Give an example for imperfect game. Is the environment fully observable?

6. What axiom is needed to infer the fact *Female (Laura)* given the facts *Male (Jim)* and *Spouse (Jim, Laura)*?

7. Mention the significance of training set in goal-based learning.

8. When do you say a hypothesis is realizable?

9. What is a 'happy graph'?

10. Mention the significance of identifying n-grams in Machine Translation.

PART B — (5 × 16 = 80 marks)

11. (a) (i) For each of the following agents, develop a PEAS description of the task environment : (8)

    (1) Robot soccer player

    (2) Internet book-shopping agent

    (3) Autonomous Mars rover

    (4) Mathematician's theorem proving assistant.

    (ii) Describe the PEAS description of a Paint Spraying Agent. (8)

Or

    (b) (i) With neat illustrations explain the algorithm for calculating mini-max decisions. (8)

    (ii) Distinguish : BFS and DFS. Provide an example of both algorithms and explain. (8)

12. (a) Discuss various blind search strategies by supplying illustrations to support the evaluation criteria. (16)

Or

    (b) (i) Describe a state space in which iterative deepening search performs much worse than depth-first search. (8)

    (ii) Discuss briefly the optimality in A* search. (8)

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

Or

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

14. (a) (i) How to assess the performance of a learning algorithm. (8)

    (ii) Comment on the reflection of noise and overfitting over the performance of learning algorithm. (8)

Or

    (b) (i) Explain boosting as an ensemble learning algorithm. (8)

    (ii) Distinguish : Supervised learning and unsupervised learning with examples. (8)

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15. (a) Consider the problem faced by an infant learning to speak and understand a language. Explain how this process fits into the general learning model, identifying each of the components of the model as appropriate. (16)

Or

(b) Define : Precision, Recall, ROC Curve, TP, FP, TN, FN for the following. (16)

	In result set	Not in result set
Relevant	30	20
Not relevant	10	40

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