

C 3156

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Sixth Semester

(Regulation 2004)

Computer Science and Engineering

CS 1351 — ARTIFICIAL INTELLIGENCE

(Common to B.E. (Part-Time) Fifth Semester – Regulation – 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the PEAS description of an “Interactive English Tutor” System.
2. Write an informal description for the general tree search algorithm.
3. What is a local minima problem?
4. How does alpha-beta pruning technique works?
5. Name the two kinds of synchronic rules that allow deductions.
6. What is referential transparency?
7. List out the steps in Explanation Based Learning.
8. Give an example for linearly non-separable function.
9. What are the seven processes involved in a communication episode?
10. What are the characteristics of an Information Retrieval System?

PART B — (5 × 16 = 80 marks)

11. (a) What are the four basic types of agent program in any intelligent system? Explain how did you convert them into learning agents? (16)

Or

- (b) Explain the following uninformed search strategies with examples.
 - (i) Breadth First Search (4)
 - (ii) Uniform Cost Search (4)
 - (iii) Depth First Search (4)
 - (iv) Depth Limited Search. (4)

12. (a) (i) What are Constraint Satisfaction Problems? How can you formulate them as search problems? (3)
- (ii) Discuss the various issues associated with the backtracking search for CSPs. How are they addressed? (13)

Or

- (b) Explain the following local search strategies with examples.
- (i) Hill Climbing (5)
- (ii) Genetic Algorithms (5)
- (iii) Simulated Annealing (3)
- (iv) Local Beam Search. (3)

13. (a) Explain the various steps associated with the knowledge engineering process? Discuss them by applying the steps to any real world application of your choice. (16)

Or

- (b) (i) What are the various ontologies involved in situation calculus? (4)
- (ii) How did you solve the following problems in Situation Calculus?
- (1) Representational frame problems (6)
- (2) Inferential frame problems. (6)

14. (a) Explain with proper example how EM algorithm can be used for learning with hidden variables. (16)

Or

- (b) Describe how Decision Trees could be used for inductive learning. Explain its effectiveness with a suitable example. (16)

15. (a) Explain the Machine Translation system with a neat sketch. Analyze its learning probabilities. (16)

Or

- (b) Perform Bottom Up and Top Down Parsing for the input "*the wumpus is dead*". (8 + 8)