

B.E DEGREE EXAMINATIONS: APRIL 2011

Sixth Semester

COMPUTER SCIENCE AND ENGINEERING

U07CS601: Artificial Intelligence

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. _____ type of agent responds directly to percepts.
a) Simple reflex b) model based reflex c) goal based d) utility based
2. A problem with fewer restrictions on the actions is called _____ problems.
a) Contingency b) toy problem c) real world d) relaxed
3. Local search using the _____ heuristic has been applied to constraint satisfaction problem with great success.
a) degree b) least-constraining value c) min-conflicts d) constraint-value
4. The _____ rule yields a complete inference algorithm for knowledge bases that are expressed in conjunctive normal form.
a) inference b) resolution c) unification d) backtracking
5. _____ specifies a mapping from symbols to the model.
a) predicate b) inference c) interpretation d) quantifier
6. _____ is the process of removing existential quantifiers by elimination.
a) Memoization b) Skolemization c) Factorization d) unification
7. The _____ algorithm processes the planning graph using a backward search to extract a plan.
a) GRAPHPLAN b) SATPLAN c) STRIPS d) WALKSAT
8. _____ learning involves learning from examples of its inputs and outputs.
a) reinforcement b) supervised c) unsupervised d) enforcement
9. In _____ model we view each training instance as generating a little density function.
a) Bayesian b) kernel c) markov d) instance-based
10. A _____ is a figure of speech in which one object is used to stand for another.
a) metaphor b) metonymy c) acoustic model d) DCG

PART B (10 x 2 = 20 Marks)

11. Define rational agent.
12. What are the reasons that hill climbing often gets stuck?
13. What is meant by chronological backtracking?

14. What are the requirements that should be satisfied by a tree decomposition?
15. What are the two kinds of synchronic rules?
16. What are propositional attitudes?
17. What are the issues that affect the design of a learning element?
18. What are the drawbacks of a version space approach?
19. What is Q-learning?
20. What are the approaches to learn utilities?

PART C (5 x 14 =70 Marks)

21. a) Discuss briefly the basic categories of agent program that embody the principles of intelligence systems.

(OR)

b) (i) Differentiate between informed and uninformed search strategies. (4)

(ii) Describe the A*search with an example. Give the proof of optimality of A*. (10)

22. a) (i) Give the algorithm for solving constraint satisfaction problems by local search. (7)

(ii) Explain in detail about Min-Max algorithm. (7)

(OR)

b) (i) Describe Alpha-Beta pruning and its effectiveness with an example. (8)

(ii) Write an algorithm for knowledge-based agent. (6)

23. a) (i) Illustrate the use of first-order-logic to represent the knowledge. (8)

(ii) Explain backward chaining algorithm with an example. (6)

(OR)

b) Discuss the general purpose ontology with its elements.

24. a) (i) Discuss in detail about Partial order planning with an example. (10)

(ii) What are the constraints of utility theory? (4)

(OR)

b) (i) Explain with an example learning using Decision trees. (7)

(ii) Describe in detail about explanation-based learning. (7)

25. a) What are the characteristics of statistical learning methods. Describe how learning can be caused out with hidden variables with an example.

(OR)

b) (i) Describe the process involved in communication using the example sentence "The wumpus is dead". (8)

(ii) Write a note on semantic interpretation. (6)
