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**Question Paper Code : 21312**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Sixth Semester

Computer Science and Engineering

CS 2351/CS 61/10144 CS 601 — ARTIFICIAL INTELLIGENCE

(Common to Seventh Semester – Electronics and Instrumentation Engineering)

(Regulation 2008 /2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the four components to define a problem? Define them.
2. Define basic agent programs.
3. Define universal and existential quantifiers.
4. What is skolemization?
5. What is a consistent plan?
6. Define critical path.
7. State Baye's rule.
8. Give the full specification of a Bayesian network.
9. Distinguish between supervised and unsupervised learning.
10. Define support vectors.

PART B — (5 × 16 = 80 marks)

11. (a) (i) What is uninformed search? Explain depth first search with example. (8)
- (ii) Give the algorithm for recursive best first search. (8)

Or

- (b) (i) Explain the nature of heuristics with an example. What is the effect of heuristic accuracy on performance? (8)  
(ii) Write a simple back tracking algorithm for constraint satisfaction problems. (8)
12. (a) (i) Explain the steps involved in knowledge engineering projects with example. (10)  
(ii) Give the five logical connectives used to construct complex sentences and give the formal grammar of propositional logic. (6)

Or

- (b) (i) Discuss backward chaining algorithm. (8)  
(ii) Explain the algorithm for computing more general unifiers. (8)
13. (a) (i) Discuss state space search based planning algorithms. (8)  
(ii) Explain GRAPHPLAN algorithm in detail. (8)

Or

- (b) (i) What way will you modify POP to incorporate HTN planning? Explain with example. (8)  
(ii) Discuss various planning methods for handling indeterminacy. (8)
14. (a) (i) Write the enumeration algorithm for answering queries on Bayesian networks. (8)  
(ii) Describe a method for constructing Bayesian networks. (8)

Or

- (b) (i) Discuss smoothing with equations and algorithm. (8)  
(ii) Explain the basic concepts of hidden Markov model and its role in smoothing. (8)
15. (a) (i) Give decision tree learning algorithm and explain. (8)  
(ii) Explain EM algorithm. (8)

Or

- (b) (i) Explain back propagation process with its algorithm. (8)  
(ii) What is passive ADP agent? Give full agent program for a passive ADP agent. (8)