

**B.Tech. (COMPUTER SCIENCE AND
ENGINEERING)**

Term-End Examination

December, 2012

BICS-021 : ARTIFICIAL INTELLIGENCE

Time : 3 hours

Maximum Marks : 70

Note : Attempt any seven questions.

1. (a) Discuss the performance of A* algorithm when the heuristic function either under estimate or overestimates the value of states. 5
- (b) What is AI ? Write various areas of AI. and discuss various types of production systems and their characteristics. 5
2. (a) Compare breadth first search and depth first search techniques. Also discuss hill climbing search technique with example. 5
- (b) How the knowledge can be represented in semantic nets ? Explain it. Draw the Semantic network of sentence. 5

“Bobby gives Arisha a gift”.

3. (a) Represent following sentences in symbol logic : 5
- (i) All students like good teachers
 - (ii) All that glitters is not gold
 - (iii) Fruits and vegetables are delicious
- (b) For the set $S = \{P \vee Q, \sim Q \vee R, \sim P \vee Q, \sim R\}$ derive an empty clause from S by resolution and differentiate between resolution and refutation. 5
4. What do you understand by a conceptual dependency graph ? Give the conceptual dependency graph for the sentence "Mary drove her car to office" and describe the steps required for a program to transform the sentence to an internal conceptual dependency structure. 10
5. Describe Semantic Net and frames with suitable examples. What are the different game playing techniques ? Explain minimax procedure with suitable example. 10
6. "Some medicines are dangerous only if taken in excessive amount" translate the above sentence into formula's in predicate logic and then to clause form. 10

7. (a) What are the planning techniques ? 5
Differentiate between goal stack - planning
and hierarchical planning with suitable
example.
- (b) What is Natural language processing ? 5
How it is different from common sense ?
8. What is expert system ? Explain in short the 10
working of DENDRAL and MYCIN and discuss
the concept of uncertainty in expert system.
9. Explain how the meta knowledge used in expert 10
system ? Also discuss various learning techniques
used in expert system.
10. Write short notes on following (*any two*) : 5+5
- (a) Baye's theorem
- (b) AO* algorithm
- (c) Scripts
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