

**GANPAT UNIVERSITY**  
**B. Tech Sem VII (CE/IT) Examination Nov-Dec 2011**  
**CE/IT 702: Artificial Intelligence**

**TIME: 3 HOURS**

**MARKS: 70**

**Instructions:** 1. Figures to the right indicate full marks of the question.  
2. All questions are compulsory.

**SECTION: I**

Q:1 (a) What is prolog? Write a program to demonstrate the cut(!) and fail predicates using prolog. [4]

(b) Discuss resolution in propositional logic with algorithm. [7]

Q:2 (a) Assume the following facts. [6]

1. Steve only likes easy courses.
2. Science courses are hard.
3. All the courses in the basket weaving department are easy.
4. BK301 is a basket weaving course.

Use resolution to answer the question, "What course would Steve like".

(b) Discuss the importance of ISA and INSTANCE relationships in semantic net with suitable example. [3]

(c) Discuss the limitations of Expert system. [3]

**OR**

Q:2 (a) Discuss Unification Algorithm. [6]

(b) Convert the following statements in predicate form [3]

1. All Romans were either Loyal to caesar or hated him.
2. People only try to assassinate rulers they are not loyal to.
3. Everyone loyal to someone.

(c) Compare Monotonic reasoning vs Nonmonotonic reasoning [3]

Q:3 (a) Discuss Semantic net and Frames with suitable example. [6]

(b) What is problem Reduction? Explain AND-OR graph with suitable example. [6]

**OR**

Q:3 (a) Explain A\* Algorithm with suitable example. [6]

(b) Solve the following cryptarithmic problem. Also suggest the strategy. [6]

$$\begin{array}{r} \phantom{+} \phantom{M} \phantom{A} \phantom{S} \phantom{E} \phantom{R} \\ + \phantom{M} \phantom{A} \phantom{S} \phantom{E} \phantom{R} \\ \hline M \phantom{A} \phantom{S} \phantom{E} \phantom{R} \end{array}$$



## SECTION: II

- Q:4 (a) Classify the problems according to characteristics of AI problems. [7]  
(b) Explain Best problem solving technique to solve the problem of 'Playing Chess'. [4]
- Q:5 (a) Solve and suggest the appropriate strategy for the following water-jug problem. [7]  
"You are given two jugs of capacity having 4 liters and 3 liters. You have to obtain 2 liters of water. There are no measuring markers on jugs."  
(b) Compare BFS and DFS. [4]  
(c) Describe the drawback of AI. [1]
- OR**
- Q:5 (a) When will Hill climbing searches fail? Do Steepest ascent hill climbing always find solutions? How might some problems be overcome in the search? [6]  
(b) Write the examples where hill climbing and best first search behave (a) similarly (b) differently. [3]  
(c) Discuss Best First Search. [3]
- Q:6 (a) What is simulated Annealing. Write an algorithm. [6]  
(b) Discuss Steepest Ascent Hill Climbing. [4]  
(c) Discuss Hill climbing and TSP in brief. [2]
- OR**
- Q:6 (a) What is Problem Reduction? Explain AND-OR graph with suitable example. [5]  
(b) Discuss Means-End Analysis with suitable example. [4]  
(c) Explain following terms. [3]  
1. Chronological Backtracking  
2. Operationalization  
3. Knowledge

End of Paper