



- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness.
 9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain the following : 6
 i) Turing test
 ii) AI Techniques

- b) Define AI. Explain the 7 problem characteristics with example. 7

OR

2. a) Suppose, you are given two jugs 4 gallon and 3 gallon capacity. Neither has any measuring mark on it. There is a pump that can be used to fill jug with water. How can you get exactly 2 gallon of water in 3 gallon jug & you cannot throw water on ground. Determine final state and give the state space representation for this problem. Assume, initial state of both the jugs are empty. 6

- b) What are the characteristics of a production system? Write one example of monotonic and nonmonotonic production system. 7

3. a) Write the algorithm for Depth first search. 6

- b) Write and explain with suitable example AO* algorithm. 7

OR

4. a) What do you mean by constraint satisfaction problem? Solve the following cryptarithmic problem given below : (Make suitable assumptions) 6

$$\begin{array}{r} \text{S E N D} \\ + \text{M O R E} \\ \hline \text{M O N E Y} \end{array}$$

- b) Discuss the problems of Hill climbing and solution of the problems. 7

5. a) Write and explain the issues in knowledge representation in solving AI problems. 6

- b) Write the purpose of using ontology. Discuss the term ontology and types of ontology. Give any example of ontology. 7

OR

6. a) Consider the following statements 7
i) Mark is calico ii) Herb is tuna
iii) Charlie is tuna iv) All tunas are fishes
v) All calico's are cats vi) All cats like to eat all kinds of fishes.
Prove that Mark like to eat Charlie using resolution principle.

b) Explain the steps used by propositional logic. 6

7. a) Explain the frames and write a frame to represent a bag. 7
b) Write a script for "going to examination hall". 7

OR

8. a) What do you mean by semantic network? Discuss the symbols used to represent knowledge using semantic network and draw a semantic network for a statement "John is a brother of Mary". 7
b) Explain the following **any one**. 7
i) Recursive Transition Network with diagram.
ii) NLP applications and techniques of NLP.

9. a) Explain the knowledge engineering process in detail. 6
b) Draw with diagram the basic architecture of expert system. Explain the function of each block. 7

OR

10. a) Write the difference between 8
i) Problem domain and knowledge domain.
ii) Conventional system and expert system.
b) Explain the following **any one**. 5
i) PROSPECTOR expert system.
ii) MYCIN expert system.

11. a) State and explain Bayes theorem with example. 7
b) Explain the Dempster - Shafer theory with example. 7

OR

12. a) What do you mean by fuzzy logic? Differentiate between fuzzy logic & predicate logic. 7
b) Explain the following **any two**. 7
i) Certainty factor (C.F.) ii) Crisp set
iii) Membership function iv) Applications of fuzzy logic.
