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- 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 and adequate dimensions.
  9. Assume suitable data whenever necessary.
  10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Define Artificial Intelligence. Explain the task domains of AI. **5**
- b) Define production system. Explain its characteristics and give the production system for a water Jug problem. **8**

**OR**

2. a) Explain different problem characteristics in detail. **8**
- b) Define state space and explain with example. **5**
3. a) Illustrate the Breadth first search algorithm & differentiate between Breadth first and depth first search. **8**
- b) Explain A\* Algorithm. **6**

**OR**

4. a) Describe Best-first search. Explain the use of OR Graphs. **8**
- b) Explain Means-end analysis. **6**
5. a) Write an unification Algorithm. **7**
- b) Consider the following sentences. **6**
- i) John Likes all kinds of food.
  - ii) Apples are food.
  - iii) Chicken is food.
  - iv) All employees earning rupees two lakhs or more pay taxes.
  - v) Everyone likes ice cream menus there is no one who does not like ice cream.
  - vi) Brothers are siblings.
- Translate these sentences into formulas in predicate logic.

**OR**

6. a) Write an Algorithm for propositional logic. Write the disadvantages of it. 7
- b) Write short note on **any three**. 6
- i) Backward Chaining
  - ii) Semantic nets
  - iii) Frames
  - iv) Scripts
7. a) Discuss how to resolve the issue of uncertain knowledge. 7
- b) Describe Bayesian Network. 6
- OR**
8. a) Discuss Baye's Theorem of Probability in detail. 7
- b) Explain Fuzzy logic with example. 6
9. a) Explain different types of learning with example. 7
- b) Draw and explain block diagram of General Learning model. 6
- OR**
10. a) Define Learning. Explain Rote learning technique in detail. 7
- b) Explain the factors affecting learning performance. State its performance measures. 6
11. a) Define expert system. Write its characteristic features. Also give the block diagram architecture of expert system. 8
- b) Discuss expert system shell and state its advantages. 6
- OR**
12. a) Explain Natural language processing and types of grammar used in Natural language processing. 8
- b) Write short note on **any three**.
- i) Knowledge Based system. 2
  - ii) Automated Reasoning. 2
  - iii) Knowledge Engineering. 2
  - iv) Knowledge Acquisition. 2

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## ~ Chinese Proverb

