B.E. Seventh Semester (Computer Technology) (C.B.S.)
Artificial Intelligence

P. Pages : 2

Time : Three Hours

0125

Max. Marks : 80

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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. Diagrams should be given whenever necessary.
11. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain the term AI. And write the importance of AI, and task domains of AI system. **6**

b) Why we need production system? Write the different types of production systems and write one example of each type. **7**

OR

2. a) Analyze the following problem with respect to all problem characteristics. **8**
   i)   Travelling salesman problem
   ii) Block world problem

b) What are issues taken into consideration in the design of search programs. Suggest any optimized solution for it. **5**

3. a) Why we need heuristic function? Explain the heuristic function to solve Tic-Tac-Toe problem or 8-puzzle problem. **7**

b) Write the algorithm for Best-first search. **7**

OR

4. a) Write the difference between:- **9**
   i)   Procedural and declarative knowledge
   ii) Predicate logic and propositional logic
   iii) Forward and Backward reasoning.

b) Write the steps used for unification algorithm. **5**

5. a) For the following statement, construct a conceptual graph:- **5**
   "If a dog is on a mat, then it is a happy pet".

b) Write the conceptual dependency for the statement given below:- **5**
   "Mary at noodles with a fork".

c) Represent the following logic statements using semantic network nodes and links **4**
   i) $(\forall x)$ [Pigeon $(x) \rightarrow$ Bird (x)]

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6. a) What is the importance of using Bayes theorem? Explain , the conditional probability, posterior probability and prior probability. **5**

b) Explain the following :- **9**
   i) Fuzzy logic and its applications.
   ii) Certainty factor.
   iii) Monotonic reasoning with example.

7. a) Define the term learning. Draw and explain the general learning model. **7**

b) Explain the following types of learning with example:- **6**
   i) Induction learning
   ii) Learning by discovery
   iii) Learning by analogy

OR

8. a) Explain the following knowledge system building tools **any two.** **9**
   i) Radian Rule master
   ii) KEE (Knowledge engineering Environment)
   ii) OPS5 system.

b) What do you mean by expert system shell? Draw neatly the architecture of expert system. **4**

9. a) What do you mean by NLP? Explain the following components of NLP. **7**
   i) NLU (Natural Language Understanding) ii) NLG (Natural Language Generation)

b) List the levels of NLP and explain each with suitable example. **6**

OR

10. a) Write the two basic parsing techniques and differentiate them. **3**

b) Write the importance of Game playing concept in AI. **4**

c) Explain the following **any one.** **6**
   i) Mini Max search procedure ii) Alpha - beta pruning.

11. a) Explain the knowledge representation in artificial neural networks. **6**

b) Explain the life cycle of genetic algorithm. **5**

c) Write one application of neural network, and explain it. **2**

OR

12. a) List the genetic operators and explain each of them with suitable example. **7**

b) Explain the following terms:- **6**
   i) Genes ii) Chromosomes iii) Cost function.

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