

FACULTY OF INFORMATICS

B.E. 3/4 (IT) II-Semester (New)(Main)Examination, May 2013

Subject : Artificial Intelligence

Time : 3 Hours

Max. Marks: 75

*Note: Answer all questions of Part - A and answer any five questions from Part-B.***PART – A** (25 Marks)

1. Define Intelligent system. List various applications of AI. (2)
2. Show that the following formulae are logically equivalent or not by using truth table. (3)
[$A \rightarrow (B \vee C)$, $\neg A \vee B \vee C$]
3. What are the different phases in expert systems? (3)
4. State Bayes theorem. (2)
5. Define clustering and list various types of clustering algorithms. (2)
6. Write a short note on recurrent networks. (2)
7. Define ANN. (3)
8. Define semantic analysis. (2)
9. What is a decision tree? Define information gain. (3)
10. Define Skolem function. Give an example. (3)

PART – B (5x10=50 Marks)

11. There are two jugs, a 5-gallon (5-g) and other 3-gallon (3-g) with no measuring marker on them. There is endless supply of water through tap. The task is to get 4-gallon of water in the 5-g jug. Describe the state space and production rules and find the solution path. (10)
- 12.(a) Write the procedure to convert the formula in propositional logic into CNF. Convert the formula $(\neg A \rightarrow B) \wedge (C \wedge \neg A)$ into its equivalent CNF representation. (5)
(b) Explain in detail how knowledge is represented using semantic networks. (5)
- 13.(a) Write a short note on monotonic and non monotonic systems. (5)
(b) Explain the architecture of expert systems in detail with the help of a neat diagram. (5)
- 14.(a) Design machine learning system. Explain any three learning methods. (5)
(b) Define perceptron and design a perceptron for the Boolean function OR. (5)
15. Describe natural language processing in detail and write a short note on any two parsers. (10)
16. Explain multilayer feed forward networks in detail. Explain how these networks are trained to learn a concept. (10)
17. Write short notes on the following:
 - (a) A* Algorithm (3)
 - (b) Dempster-Shafer theory (4)
 - (c) Constraint satisfaction problem (3)