

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014****Subject code: 1710410****Date: 08-12-2014****Subject Name: Introduction to Artificial Intelligence****Time: 02:30 pm - 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Write a short note on **09**
 i) Fuzzy logic ii) Forward Vs Backward reasoning iii) Bayes Network
- (b) State PSAT problem **02**
- (c) Define production system. State the requirements of a good control strategy **03**
- Q.2** (a) i) Define the terms: **03**
 1) State space 2) Heuristic search 3) Horn clause
- ii) Analyze the following the following problems with respect to seven problem characteristics **04**
 1) 8 Puzzle 2) Tower of Hanoi
- (b) Explain best first search with suitable example. What happens when $\hat{h}$ underestimates or $\hat{h}$ overestimates h in case of A* algorithm. **07**
- OR**
- (b) Explain with example problem reduction algorithm. What is the limitation of this algorithm? **07**
- Q.3** (a) What are the issues in two player games? Explain how minimax search procedure helps to solve two player games. **07**
- (b) Explain how means ends analysis algorithm works **07**
- OR**
- Q.3** (a) Explain alpha beta pruning done over minimax search. **07**
- (b) Explain genetic programming process. **07**
- Q.4** (a) Explain commonsense knowledge briefly. What is its importance? What are the difficulties for its representation **07**
- (b) Explain briefly the steps to convert given wff into clause form **07**
- OR**
- Q.4** (a) Write unification algorithm **07**
- Q.4** (b) Consider following facts: **07**
- John likes all kinds of food.
 - Apples are food.
 - Chicken is food
 - Anything anyone eats and isn't killed by is food.
 - Bill eats peanuts and is still alive.
 - Sue eats everything Bill eats.
- Use resolution to prove, "John likes peanuts".
- Q.5** (a) What is perceptron? Explain its expression and working briefly. What is meant by a linearly-separable problem? **07**
- (b) What are the components of a typical expert system? Explain. **07**
- OR**
- Q.5** (a) Explain the back-propagation algorithm and explain its use. **07**
- (b) Explain the nonmonotonic reasoning. **07**