

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME – SEMESTER I (NEW) – • EXAMINATION – SUMMER 2016**

**Subject Code: 2710212**

**Date: 19/05/2016**

**Subject Name: Artificial Intelligence**

**Time: 02:30 pm to 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) What is A.I. technique? What are the problems when A.I. problems are solved by using non A.I. technique? **07**
- (b) Explain the purpose of production system with examples. Also explain the various types of production system with brief explanation. **07**

- Q.2** (a) Define the heuristic search by giving at least two examples. **07**
- (b) Write down the A\* Algorithm with its merits and demerits. **07**

**OR**

- (b) Explain breadth-first search technique along with its algorithm. **07**

- Q.3** (a) Why does game playing appeared to be a good domain to explore machine intelligence? **07**
- (b) Explain the following terms in game playing with examples. **07**
- (i) Minimax (Position, Depth, Player)
  - (ii) Deep Enough (Position, Depth)

**OR**

- Q.3** (a) Explain alpha-beta cut-offs in game playing with example. **07**
- (b) What is propositional logic? Explain the knowledge representation using propositional logic. **07**

- Q.4** (a) Differentiate between supervised learning and unsupervised learning. **07**
- (b) Consider the following sentence **07**
- (i) If X is on top of Y then Y support X
  - (ii) If X is above Y and they are touching each other then X is on top of Y.
  - (iii) A cup is above a book
  - (iv) A cup is touching a book

Translate these statements in predicate logic. Prove by backward reasoning  
“ Book Support Cup”

**OR**

- Q.4** (a) What do you mean by probabilistic reasoning? Give an example. **07**
- (b) Explain how reasoning can be done using fuzzy logic. Briefly describe the application of fuzzy logic. **07**

- Q.5** (a) Explain cross-correlation of two random processes and its significance in artificial intelligence. **07**
- (b) Give structure of an expert system, explain its components. **07**

**OR**

- Q.5** (a) What do you understand by neural network? Give differences between A.I. and artificial neural network. **07**

**(b)** Write short notes on **any two** of the following

**07**

(i) Single layer perceptrons

(ii) Semantic nets

(iii) Regression Method

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