

**GUJARAT TECHNOLOGICAL UNIVERSITY****M. E. - SEMESTER – III • EXAMINATION – WINTER • 2014****Subject code: 730802****Date: 27-11-2014****Subject Name: 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) What is artificial intelligence and what are the different AI techniques. 07  
Discuss how AI techniques helps computer to be smarter.
- (b) How do we define a problem as a state space search? Explain giving a suitable example. 07

- Q.2** (a) Explain Mean-End analysis with a suitable algorithm. 07
- (b) Solve water jug problem with capacity of the two jugs as 2 and 4 liters, writing all the production rules. Also give at least one control strategy solution for the problem. 07

**OR**

- (b) Compare the Depth first and Best first searching methods. Suggest some application to which each is best suited? 07

- Q.3** (a) State the Resolution algorithm for Predicate logic assuming a set of given a set of given statements F and a statement P to be proved. 07
- (b) What do you mean by logic programming? Define a Horn clause. 07

**OR**

- Q.3** (a) Explain A\* algorithm. What is the importance proper selection of  $h(n)$  and  $g(n)$ . 07
- (b) Describe Turing test. If the Turing test is passed does this show that computer exhibits intelligence? State your reasons. 07

- Q.4** (a) What is an expert system? Compare an Expert system and a software system. 07
- (b) What is Fuzzy logic? Explain the following fuzzy operations: Complement, Containment, Intersection, and Union. 07

**OR**

- Q.4** (a) Explain architecture of a Rule-Based expert system. 07
- (b) Explain the various properties of fuzzy sets. 07

- Q.5** (a) What do you mean by Artificial Neural network? Discuss various applications of ANN. 07
- (b) What sort of operations does a vision system need to perform and why is this relevant to artificial intelligence. 07

**OR**

- Q.5** (a) With the help of a suitable block diagram explain the pattern recognition process. 07
- (b) List the features that make Natural Language understanding hard? Also state the need of language understanding. 07

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