Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VIII(NEW) EXAMINATION – SUMMER 2019**

**Subject Code:2180703 Date:15/05/2019**

**Subject Name:Artificial Intelligence**

**Time:10:30 AM TO 01:00 PM Total Marks: 70**

**Instructions:**

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

| | | | MARKS |
|---|---|---|---|
| **Q.1** | **(a)** | What is Soft Computing? | **03** |
| | **(b)** | Describe Depth First Search. | **04** |
| | **(c)** | For the Water Jug problem, describe state space representation, actions, start and end state. | **07** |
| **Q.2** | **(a)** | Discuss limitation of hill-climbing method. | **03** |
| | **(b)** | What is heuristic function? Discuss with an example. | **04** |
| | **(c)** | Discuss A* algorithm. Also give one example to explain it. | **07** |
| | | **OR** | |
| | **(c)** | Discuss Simulated Annealing search method. How is it different than greedy method? | **07** |
| **Q.3** | **(a)** | Discuss Fail in prolog. | **03** |
| | **(b)** | Differentiate with example representation of “Instance” and “Isa” relationships. | **04** |
| | **(c)** | Explain with example how choosing the granularity of representation and finding the right structure are crucial issues in knowledge representation? | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Define epoch with respect to ANN. | **03** |
| | **(b)** | Write a PROLOG program to count total occurrence of a character in a given list of characters. | **04** |
| | **(c)** | What is wrong with the following arguments?<br>• Men are widely distributed over the earth<br>• Socrates is a man.<br>• Therefore, Socrates is widely distributed over the earth.<br>How should the facts represented by these sentences be represented in logic so that this problem does not arise? | **07** |
| **Q.4** | **(a)** | Discus perceptron. | **03** |
| | **(b)** | Explain Hopfield Network. | **04** |
| | **(c)** | Differentiate Fuzzy logic and Crisp logic. Also describe set operations on fuzzy and crisp logic. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Discus non-monotonic reasoning. | **03** |
| | **(b)** | Discuss various defuzzification methods. | **04** |
| | **(c)** | Discuss Nonlinear Planning using Constraint Posting with example. | **07** |
| **Q.5** | **(a)** | Write a prolog program to check whether or not given number is positive. | **03** |
| | **(b)** | Discuss Bayesian network and its application. | **04** |
| | **(c)** | Discuss min-max search method with an example. | **07** |

**OR**

| | | | |
|---|---|---|---|
| **Q.5** | **(a)** | Discuss Iterative deepening search method. | **03** |
| | **(b)** | Explain various steps of Natural Language Processing | **04** |
| | **(c)** | Define: Frames. Draw Semantic Net for following statements.<br>a) Every kid likes candy.<br>b) Every school going kid likes candy. | **07** |

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