

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3170716****Date:13/12/2021****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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) What is a “control strategy” and what are its characteristics? **03**
 (b) Describe in brief how Min-Max search procedure works. **04**
 (c) Enlist and discuss major task domains of Artificial Intelligence. **07**
- Q.2** (a) Discuss briefly backward reasoning with example. **03**
 (b) Explain with example how recursive predicate is defined in Prolog? **04**
 (c) State Water Jug problem. Give its state space representation **07**

OR

- (c) Explain A* algorithm. What happens if h' underestimates h and overestimates h? **07**
- Q.3** (a) Explain local maxima, plateau and ridge in brief **03**
 (b) Discuss the approaches to knowledge representation **04**
 (c) Demonstrate briefly the steps to convert given wff into clause form **07**

OR

- Q.3** (a) Differentiate Informed & Uninformed search. Give examples. **03**
 (b) Explain best first search algorithm. **04**
 (c) Consider the following facts: **07**
 * Hemant only likes easy courses.
 * Science courses are hard.
 * All the courses in basketweaving department are easy.
 * BK301 is a basketweaving course.

Use resolution to answer the question, “What course would Hemant like?”

- Q.4** (a) What is certainty factor? **03**
 (b) Discuss Bayesian network and its application. **04**
 (c) Explain connectionist models. What is perceptron? What is the concept of back propagation for ANNs? **07**

OR

- Q.4** (a) What do you mean by Expert Systems? List out its four applications. **03**
 (b) Discuss Goal Stack planning **04**
 (c) Write about various defuzzification methods **07**
- Q.5** (a) Discuss cut and fail predicate in prolog **03**
 (b) Describe working principle of Genetic Algorithm **04**
 (c) What is nonmonotonic reasoning? Explain logics for nonmonotonic reasoning. **07**

OR

- Q.5** (a) Write a prolog program to append two given lists into third **03**
 (b) List out the genetic operators. Describe them briefly **04**
 (c) Write a note on Natural Language Processing **07**