

## CMR ENGINEERING COLLEGE: : HYDERABAD

## UGC AUTONOMOUS

## III-B.TECH-II-Semester End Examinations (Supply) - June- 2025

## ARTIFICIAL INTELLIGENCE

## (CSD)

[Time: 3 Hours]

[Max. Marks: 70]

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A****(20 Marks)**

1. a) Write the various categories of intelligent systems. [2M]
- b) Illustrate a graph to be searched using bidirectional search. [2M]
- c) List out the equivalence laws. [2M]
- d) Write the conditions of validity, satisfiability and unsatisfiability of propositional logic. [2M]
- e) Distinguish between expert versus traditional systems. [2M]
- f) What is an Expert System? [2M]
- g) Define Machine Learning. [2M]
- h) State one primary objective of support vector machines. [2M]
- i) Outline the phases involved in sentence analysis. [2M]
- j) Define Case Grammars. [2M]

**PART-B****(50 Marks)**

2. Consider an example to solve the 8-puzzle using Hill Climbing. [10M]

**OR**

3. Trace the constraint satisfaction procedure solving the following cryptarithmic problem: CROSS + ROADS = DANGER [10M]

4. Prove that  $A \wedge (B \vee C)$  is deduced from  $A \wedge B$ . [10M]

**OR**

5. Write resolution refutation in proposition logic. [10M]

6. Describe Bayes theorem? Define Non monotonic reasoning? What is Uncertainty Measure? Explain briefly. [10M]

**OR**

7. What is Dempster-Shafer Theory? Discuss its advantages over traditional probabilistic approaches in handling uncertainty. [10M]

8. Identify and discuss two critical design issues in constructing Artificial Neural Networks. [10M]

**OR**

9. Discuss the process of building a decision tree and how it is used for classification tasks. [10M]

10. Describe the process of Semantic Analysis in Natural Language Processing. [10M]

**OR**

11. Explain the importance of Grammars and Parsers in Natural Language Processing. [10M]

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