

Roll No. ....

**3480**

**B. Tech. 6th Semester (CSE - Artifi.  
Intelligen. & Machine Learning Engg. )  
Examination – May, 2023**

**PRINCIPLE OF ARTIFICIAL INTELLIGENCE**

**Paper : PCC-AI-304-G**

*Time : Three hours ]*

*[ Maximum Marks : 75*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Describe the following :  $2.5 \times 6 = 15$

- (i) Data acquisition and learning.
- (ii) What is problem ? Explain its types and characteristics.
- (iii) Difference between Breath First and Depth First search.
- (iv) What is propositional logic ? Explain briefly.

- (v) Define machine learning. How it is different from AI ?
- (vi) What is the role of information retrieval in AI ? Explain.

### **SECTION – A**

- 2. (i) Write and explain Constraint satisfaction problem. 05
- (ii) What is the problem state space and search ? Explain Heuristic search in detail. 10
- 3. (a) What is the role of an agent ? Explain various types of agents in detail. 8
- (b) Discuss the following briefly :
  - (i) CSP-Forward checking
  - (ii) constraint propagation
  - (iii) CSP-Intelligent backtracking. 7

### **SECTION – B**

- 4. (a) What is the difference between Uninformed and Informed search ? Explain Iterative Deepening search technique in detail. 10
- (b) Explain Hill Climbing technique in detail. 5
- 5. Write a short note on following : 15
  - (a) Minimax Algorithm in game playing
  - (b) Alpha beta pruning
  - (c) Genetic Algorithms

## SECTION – C

6. (a) Discuss various approaches and issues of knowledge reasoning in detail. 8
- (b) How to represent knowledge ? Explain Semantic Net and Frame with the help of example. 7
7. Discuss the following : 15
- (a) Fuzzy Logic
- (b) Conditional planning & Reactive planning
- (c) Bayesian probability theorem

## SECTION – D

8. (a) What is artificial neural network ? Explain back-propagation algorithm for optimization of network. 8
- (b) What is expert system ? Explain architecture of expert system in detail. 7
9. Briefly explain : 15
- (a) Support Vector Machine (SVM).
- (b) Multi-agent based learning.
- (c) Define Natural Language Processing. Explain its various levels.