

Code No: R20A0561

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Supplementary Examinations, December 2022**Artificial Intelligence****(CSE-AIML)**

Roll No									
---------	--	--	--	--	--	--	--	--	--

Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing **ONE** Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 a. Provide a state space for the game of chess. [8M]
 b. Describe different control strategies used in problem solving [6M]

OR

- 2 a. Write the algorithm for steepest ascent hill climbing algorithm. [6M]
 b. Describe the factors determining the choice of direction of a particular problem [8M]

SECTION-II

- 3 a. Transform the following to conceptual dependencies: [6M]
 I gave pen to my friend
 Rama eat ice cream
 I borrowed book from your friend While going home,
 I saw a frog
 b. Explain Alpha – Beta Pruning [8M]

OR

- 4 a) Justify the need for computable functions and predicates in logic. [4M]
 b) What is the significance of knowledge representation? [4M]
 c) Give differences between database and knowledge base [6M]

SECTION-III

- 5 Write a short notes on the following
 a) reasoning [4M]
 b) Monotonic reasoning [5M]
 c) Non – Monotonic reasoning [5M]

OR

- 6 a. Compare contrast conventional programs and rule based systems [6M]
 b. Elucidate various knowledge level representations involved in reasoning process. [8M]

SECTION-IV

- 7 Write short notes on the following:- [4M]
 a) Route learning [4M]
 b) Induction [3M]

- c) Learning from examples.
- d) Decision Trees

[3M]
[4M]

OR

- 8 a. What is meant by "Learning"?
- b. Describe the features of memorization and direct instruction?

[5M]
[9M]

SECTION-V

- 9 a. What are the prominent features of an expert system and describe their features in detail
- b. Brief any 6 applications of expert systems

[8M]
[6M]

OR

- 10 a. Explain about knowledge acquisition.
- b. Explain with neat diagram the architecture of expert system and mention its features.

[7M]
[7M]

R20

Code No: R20A0513

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular Examinations, December 2022

Artificial Intelligence
(CSE, IT, CSE-CS, CSE-DS, CSE-IOT)

Roll No	2	0	N	3	1	A	1	2	9	9
---------	---	---	---	---	---	---	---	---	---	---

Max. Marks: 70

Time: 3 hours

Note: This question paper consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1. A List and explain various AI Languages. [7M]
B What are the basic components of AI problem solving methodology? [7M]
Illustrate with an example.

OR

2. A Illustrate the heuristic Hill Climbing Algorithm with an example. [7M]
B Explain A* Algorithm with example. [7M]

SECTION-II

3. A Discuss Alpha-Beta Pruning and its advantages over min-max method. [10M]
B Explain the Syntax and Semantics of Propositional Logic. [4M]

OR

4. A Explain forward chaining and backward chaining. [7M]
B Compare and contrast the two variants of Logic-Predicate and Propositional. [7M]

SECTION-III

5. A Explain the issues in Knowledge Representation. Define Inheritance in Semantic Net. [8M]
B Differentiate between monotonic and non monotonic reasoning. [6M]

OR

6. A Explain acting under uncertainty domain. [5M]
B Explain Bayesian Networks? [9M]

SECTION-IV

7. A Differentiate between Supervised Learning and Unsupervised Learning. [4M]
B Discuss Winston's learning briefly with neat sketch. [10M]

OR

8. A Describe the role of information gain in Decision Tree Learning. [7M]
B Explain decision tree algorithm. [7M]

SECTION-V

9. A Explain the Phases in Building Expert System. [9M]
B Explain the Applications of the Expert Systems. [5M]

OR

10. A List the Characteristics of Expert Systems. Classify various Expert System shells and tools. [8M]
B Explain about MYCIN Expert system in detail. [6M]

ARTIFICIAL INTELLIGENCE

Unit ----1

1. Describe the four categories under which AI is classified with examples? Define Artificial Intelligence? List the fields that form the basis for AI?
2. Differentiate Informed & Uninformed search. Give examples?
3. Explain the following uninformed search strategies with examples.
 - (a) Breadth First Search.
 - (b) Depth-first with Iterative Deepening
 - (c) Depth First Search
 - (d) Depth Limited Search
4. Explain the following informed search strategies with examples.
 - (a) Hill Climbing
 - (b) Generic Best-First
 - (c) A*
5. Solve the following Crypt Arithmetic Problem.

$$\begin{array}{r} \text{S E N D} \\ + \text{M O R E} \\ \hline \text{M O N E Y} \\ \hline \end{array}$$

Unit ----2

1. Give a brief note on minimax&Alpha-beta pruning with example and neat sketch?
2. Discuss Resolution&inference in first-order logic?
3. Write down the logical representations for the following sentences, suitable for use with Generalized Modus Ponens.
 - a) Horses, cows, and pigs are mammals.
 - b) An offspring of a horse is a horse.
 - c) Bluebeard is a horse.
 - d) Bluebeard is Charlie's parent.
 - e) Offspring and parent are inverse relations.
 - f) Every mammal has a parent.
4. Explain the difference between forward chaining and backward chaining?
5. **Discuss** a) Types of random variables
 - b) prior probability
 - c) posterior probability
 - d)Axioms of probability
6. What is AO* search? Explain various stages of AO* search with an example?
7. Explain Probability and Bay's Theorem.

Unit ----3

ARTIFICIAL INTELLIGENCE

1. Explain different types of knowledge and Discuss how interaction of AI with real world and components involved in showing intelligent?
2. What are the issues in knowledge representation in AI?
3. Describe Bayes theorem? Define Non monotonic reasoning? What is Uncertainty Measure? Explain briefly?
4. Discuss the following knowledge representation schemes:
 - a) Logic representation
 - b) Semantic network
 - c) Frame representation
 - d) Production rules
5. Discuss baye's rule and apply the baye's rule for the following.

A bag I contain 4 white and 6 black balls while another Bag II contains 4 white and 3 black balls. One ball is drawn at random from one of the bags, and it is found to be black. Find the probability that it was drawn from Bag I.

6. Apply the baye's rule for the following.

A man is known to speak truth 2 out of 3 times. He throws a die and reports that the number obtained is a four. Find the probability that the number obtained is actually a four.

7. Discuss:
 - A) Basic probability notation
 - B) Prior probability
 - C) Posterior probability
 - D) Joint probability distribution
8. Explain Bayesian Belief Networks with example?

Unit ----4

1. Define and explain
 - (i) Supervised learning
 - (ii) Unsupervised learning
 - (iii) Reinforcement learning
2. What is a decision tree? Explain the decision tree learning algorithm with an example?
3. Define the following
 - a) Inductive learning.
 - b) Learning Decision Tree.
4. What is rote learning? Explain in detail with an example?
5. What is learning by taking advice? Explain in detail with an example?
6. What is learning from examples and its types?

Unit ----5

ARTIFICIAL INTELLIGENCE

1. What is Expert system? Explain its Phases or components?
2. Differentiate between Expert Systems Vs Traditional Systems?
3. Explain Architecture of expert systems.
4. List the application of Expert systems.
5. Discuss knowledge Acquisition?
6. Discuss where expert system can be applied? Write advantages and limitation of expert system