Printed Page:- 04 **Subject Code**:- **AOE0663**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VI - THEORY EXAMINATION (2023 - 2024)

Subject: Artificial Intelligence

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* **three Sections -A, B, & C.** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION A **20**

1. Attempt all parts:-

1-a. NLP stand for _____ (CO1) 1

(a) Neural Learning Protocol

(b) Natural Learning Process

(c) Natural Language Processing

(d) Neural Language Processing

1-b. Turing machine is introduce by _____ (CO1) 1

(a) Alan Turing

(b) John McCarthy

(c) Thomas Bayes

(d) Marvin Minsky

1-c. What is the space complexity of Depth-first search? (CO2) 1

(a) O(b)

(b) O(bl)

(c) O(m)

(d) O(bm)

1-d. Adversarial search problems uses _____ environment. (CO2 1

(a) Cooperative

(b) Competitive

(c) Both Competitive & Cooperative

(d) Neither Competitive nor Cooperative

1-e. ' V ' is the logical symbol of _____ . (CO3) 1

(a) Conjunction

(b) Negation

(c) Disjunction

(d) Implication

1-f. _____ is a symbol used to build complex sentences in knowledge representation. (CO3) 1

(a) Resolution

(b) Logical Connective

(c) Quantifier

(d) Proposition

1-g. The value of fuzzy set is _____ (CO4) 1

(a) Between 0 & 1

(b) Either 0 or 1

(c) Only 1

(d) Only 0

1-h. Backward chaining or reasoning is a ____ approach. (CO4) 1

(a) Goal driven

(b) Data driven

(c) Both Goal and Data driven

(d) None of the above

1-i. The purpose of Reinforcement learning is _____ . (CO5) 1

(a) To learn from labelled data

(b) To learn from a supervisor

(c) To learn from consequences of action

(d) To learn from trial and error

1-j. Clustering is a technique of _____ . (CO5) 1

(a) Active learning

(b) Supervised learning

(c) Reinforcement learning

(d) Unsupervised learning

2. Attempt all parts:-

2.a.	Define a Virtual agent with example. (CO1)	2
2.b.	Explain the Blind Search in AI. (CO2)	2
2.c.	What is the uncertain knowledge? (CO3)	2
2.d.	Define Probability. (CO4)	2
2.e.	What is artificial neural network? (CO5)	2

SECTION B **30**

3. Answer any <u>five</u> of the following:-

3-a.	Describe Artificial intelligence. Write the scope and application of Artificial intelligence. (CO1)	6
3-b.	Write the differences between Simple reflex agent and Goal based Agent with suitable example.(CO1)	6
3-c.	Explore the 8-puzzle problem in artificial intelligence and which strategy is best to solve it? (CO2)	6
3-d.	Differentiate between BFS and DFS with suitable examples. (CO2)	6
3.e.	Explain First Order Predicate Logic (FOL). How to convert a sentence into FOL. (CO3)	6
3.f.	Define Bayes theorem with example. (CO4)	6
3.g.	Explain reinforcement learning with example. (CO5)	6

SECTION C **50**

4. Answer any <u>one</u> of the following:-

4-a.	Explain the various approaches of Artificial Intelligence with example. (CO1)	10
4-b.	What is intelligent agent? Explain the concept of Learning agent with suitable diagram. (CO1)	10

5. Answer any <u>one</u> of the following:-

5-a.	Discuss depth first search algorithm with appropriate example. (CO2)	10
5-b.	Discuss different types of search algorithm and also write the properties of search algorithm. (CO2)	10

6. Answer any <u>one</u> of the following:-

6-a.	Define the term 'knowledge'. Explain the various techniques of knowledge representation. (CO3)	10
6-b.	Define Quantifiers in First-order logic. Apply rule to write sentence "All man drink coffee" in FOL. (CO3)	10

7. Answer any <u>one</u> of the following:-

7-a.	Describe the forward chaining or reasoning with example. (CO4)	10
7-b.	What is expert system? Describe the components of expert system. (CO4)	10

8. Answer any <u>one</u> of the following:-

8-a.	What is planning? Explain the continuous planning with example (CO5)	10
8-b.	What is unsupervised learning? Explain the techniques of unsupervised learning with example. (CO5)	10