Printed Page:- 03 **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 (2024 - 2025)
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, K1) 1

(a) Neural Learning Protocol
(b) Natural Learning Process
(c) Natural Language Processing
(d) Neural Language Processing

1-b. A autonomous car named _____ won 2005 DAPRA grand challenge. (CO1, K1) 1

(a) Fiddlys
(b) Stanley
(c) DeepSpace
(d) Sandstorm

1-c. A heuristic is a way of trying _____. (CO2, K1) 1

(a) To discover something or an idea embedded in a program
(b) To search and measure how far a node in a search tree seems to be from a goal
(c) To compare two nodes in a search tree to see if one is better than another
(d) All of the mentioned

1-d. LIFO is _____ Data structure. (CO2, K1) 1

(a) Stack
(b) Queue

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(c) Priority Queue, Stack

(d) Priority Stack

1-e. _____ is a symbol used to build complex sentences in knowledge representation. (CO3, K1) 1

(a) Resolution

(b) Logical Connective

(c) Quantifier

(d) Proposition

1-f. First Order Logic is also known as _____. (CO3, K1) 1

(a) First Order Predicate Calculus

(b) Quantification Theory

(c) Lower Order Calculus

(d) All of the mentioned

1-g. Backward chaining or reasoning is a ____ approach. (CO4, K1) 1

(a) Goal driven

(b) Data driven

(c) Both Goal and Data driven

(d) None of the above

1-h. Knowledge and reasoning also play a crucial role in dealing with _____ environment. (CO4, K1) 1

(a) Completely Observable

(b) Partially Observable

(c) Neither Completely nor Partially Observable

(d) Only Completely and Partially Observable

1-i. The purpose of reinforcement learning is _____ . (CO5, K1) 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. _____ is not the component of learning system. (CO5, K1) 1

(a) Learning rules

(b) Goal

(c) Introducing

(d) Experience

2. Attempt all parts:-

2.a. Define virtual agent. (CO1, K1) 2

2.b. Write short note on heuristic search. (CO2, K1) 2

2.c. Explain atomic sentence. (CO3, K1) 2

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2.d.	Write a short note on common sense reasoning. (CO4, K1)	2
2.e.	Define multi-agent planning. (CO5, K1)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Write the various scopes and applications of Artificial intelligence. (CO1, K2)	6
3-b.	Explain the PEAS representation of Intelligent Agent (CO1, K2)	6
3-c.	Explore the 8-puzzle problem in artificial intelligence and which strategy is best to solve it? (CO2, K3)	6
3-d.	Describe the properties of search algorithm. (CO2, K2)	6
3.e.	Describe the basic elements of First-order logic. (CO3, K2)	6
3.f.	Describe the architecture of expert system. (CO4, K2)	6
3.g.	Explain reinforcement learning with example. (CO5, K2)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Explain the different domains or subsets of artificial intelligence with example. (CO1, K2)	10
4-b.	Describe constraint satisfaction problem. How to solve Latin Square problem? (CO1, K3)	10

5. Answer any one of the following:-

5-a.	Explain Best First Search technique with suitable example. (CO2, K2)	10
5-b.	Distinguish between uninformed and informed search technique. (CO2, K4)	10

6. Answer any one of the following:-

6-a.	Explain Water Jug Problem using state space search and use production rules for this problem. (CO3, K3)	10
6-b.	Explain the concept of Logical representation. How it affect decision making process? (CO3, K2)	10

7. Answer any one of the following:-

7-a.	Explain the architecture of knowledge based system. (CO4, K2)	10
7-b.	Describe the backward chaining or reasoning with example. (CO4, K2)	10

8. Answer any one of the following:-

8-a.	What is supervised learning? Explain the techniques of supervised learning with example. (CO5, K2)	10
8-b.	What is planning? Explain the continuous planning with example (CO5, K2)	10