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Printed Page:-3 **Subject Code:- AMTCSE0102**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)
M.Tech
SEM: I - THEORY EXAMINATION (2025 - 2026)
Subject: Artificial lntelligence

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

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 15

1. Attempt all parts:-

1-a. The applications in the Strategic Computing Program include: (CO1,K1) 1

(a) battle management
(b) autonomous systems
(c) pilot's associate
(d) All of the above

1-b. Choose the appropriate language for describing the relationships. (CO2,K1) 1

(a) First-order logic
(b) Propositional logic
(c) ILP
(d) None of the mentioned

1-c. LIFO is _____ where as FIFO is _____. (CO3,K1) 1

(a) Stack, Queue
(b) Queue, Stack
(c) Priority Queue, Stack
(d) Stack. Priority Queue

1-d. Knowledge and reasoning also play a crucial role in dealing with _____ environment. (CO4, K2) 1

(a) Completely Observable
(b) Partially Observable
(c) Neither Completely nor Partially Observable
(d) Only Completely and Partially Observable

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1-e.	Select the correct parameters taken into account of state-space search? (CO5, K2)	1

(a) Postconditions
(b) Preconditions
(c) Effects
(d) Both Preconditions & Effects

2. Attempt all parts:-

2.a.	Discuss virtual agent in AI. (CO1, K1)	2
2.b.	Define knowledge Base in Prolog. (CO2, K2)	2
2.c.	Define advantages of Depth First Search. (CO3,K2)	2
2.d.	Illustrate semantic nets. (CO4,K2)	2
2.e.	Explain Bayesian Theory with an example. (CO5,K3)	2

SECTION-B 20

3. Attempt all parts:-

3.a. Answer any one of the following:-

3.a.(i)	Explain Simple Reflex Agent with Suitable Example. (CO1,K2)	4
3.a.(ii)	Explain which programming language is used for AI also provide any real time example. (CO1,K2)	4

3.b. Answer any one of the following:-

3.b.(i)	Explain Universal Instantiation in FOPL with example. (CO2,K2)	4
3.b.(ii)	Explain Existential Instantiation in FOPL with example. (CO2,K2)	4

3.c. Answer any one of the following:-

3.c.(i)	Define state-space search technique. (CO3, K2)	4
3.c.(ii)	Differentiate Informed & Uninformed search with examples. (CO3,K2)	4

3.d. Answer any one of the following:-

3.d.(i)	Describe Utility theory with an example and how it is helpful in AI. (CO4,K3)	4
3.d.(ii)	Define Hidden Markov Models(HMM) with an suitable example. (CO4,K3)	4

3.e. Answer any one of the following:-

3.e.(i)	Specify conditional planning, How its work in AI? (CO5,K2)	4
3.e.(ii)	Explain multi-agent system and list the characteristics in details. (CO5,K2)	4

SECTION-C 35

4. Answer any one of the following:-

4-a.	Explain the different types of Artificial Intelligence. Give the example of each. (CO1, K1)	7
4-b.	Discuss the role of NLP in Artificial intelligence with real time suitable example. (CO1, K1)	7

5. Answer any one of the following:-

5-a.	Explain the types of Inference rules in propositional logic. (CO2, K3)	7
5-b.	Elaborate Queens problem also discuss its algorithm. (CO2,K3)	7

6. Answer any one of the following:-

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6-a.	Compare between Iterative deepening Heuristic Search & A*. Which one is better explain with suitable example. (CO3,K3)	7
6-b.	Explain local search algorithm. How local search algorithm is applied to optimization problem? (CO3,K3)	7

7. Answer any one of the following:-

7-a.	Differentiate between knowledge based system and expert system. (CO4, K3)	7
7-b.	Describe knowledge based system and explain overall architecture of knowledge based system. (CO4,K2)	7

8. Answer any one of the following:-

8-a.	Describe state space search. Which method is used for state space search problem? (CO5, K3)	7
8-b.	Discuss the various forms of learning with suitable example. (CO5, K2)	7