Printed Page:- 04 **Subject Code**:- **ACSBS0601**

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. What is the full form of "AI"? (CO1) 1

(a) Artificially Intelligent

(b) Artificial Intelligence

(c) Artificially Intelligence

(d) Advanced Intelligence

1-b. Which of the following is the branch of Artificial Intelligence? (CO1) 1

(a) Machine Learning

(b) Cyber forensics

(c) Full-Stack Developer

(d) Network Design

1-c. Which data structure conveniently used to implement DFS? (CO2) 1

(a) Stacks

(b) Queues

(c) Priority Queues

(d) All of the mentioned

1-d. A* algorithm is based on _____ (CO2) 1

(a) Breadth-First-Search

(b) Depth-First-Search

(c) Uniform Cost Search

(d) Best-First-Search

1-e. A ___ is a collection of attributes or slots and associated values that describe some real-world entity. (CO3) 1

(a) Frame

(b) Semantic networks

(c) Partitioned Semantic Networks

(d) None of the above

1-f. Semantic Network represents _____ (CO3) 1

(a) Syntactic relation between concepts

(b) Semantic relations between concepts

(c) All of the mentioned

(d) None of the mentioned

1-g. There exist only two types of quantifiers, Universal Quantification and Existential Quantification. (CO4) 1

(a) TRUE

(b) FALSE

1-h. Semantic nets consists of? (CO4) 1

(a) Node

(b) Edges

(c) Labels

(d) All of the above

1-i. Which of the following is a planning technique that works by searching a state space for a solution? (CO5) 1

(a) Goal stack planning

(b) Hierarchical planning

(c) State space search planning

(d) Continuous planning

1-j. Which of the following is a form of planning that works by breaking down a 1

complex problem into smaller sub-problems? (CO5)

(a) Goal stack planning

(b) Hierarchical planning

(c) State space search planning

(d) Continuous planning

2. Attempt all parts:-

2.a.	What is agent in artificial intelligence? (CO1)	2
2.b.	Write two differences between Breadth first and Depth first search. (CO2)	2
2.c.	Define MAX and MIN in min max algorithm. Give name of one application in which it used? (CO3)	2
2.d.	Draw truth Table for following proposition: $P \rightarrow (Q \rightarrow R) \rightarrow S$ (CO4)	2
2.e.	Name various forms of learning? (CO5)	2

SECTION B **30**

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

3-a.	What are the main aspects considered before solving a complex AI problem? What is state space representation in AI? (CO1)	6
3-b.	What are some misconceptions about AI? Distinguish between strong and weak artificial intelligence? (CO1)	6
3-c.	Differentiate Between Hill Climbing and Stimulated Annealing? (CO2)	6
3-d.	Explain Uniform Cost Search with Example and also write its properties ? (CO2)	6
3.e.	What do you mean by Travelling Salesperson Problem? Explain with an example. (CO3)	6
3.f.	Write short note on Semantic Network representation, Logical representation and Frame representation? (CO4)	6
3.g.	What is the difference between supervised and unsupervised learning? Provide an example of each type. (CO5)	6

SECTION C **50**

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

4-a.	What is Intelligent Agent? Describe basic kinds of agent programs. (CO1)	10
4-b.	Describe year wise History of AI in details ? (CO1)	10

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

5-a.	What is Heuristic Search? Give the desirable properties of heuristic search algorithm? (CO2)	10

5-b. Describe the Iterative-Deepening Search with example and also write its properties, advantages and disadvantages? (CO2) 10

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

6-a. Describe semantic network, partitioned network, frames with examples also write its advantages and disadvantages? (CO3) 10

6-b. Explain n-Queens problem with its algorithm. (CO3) 10

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

7-a. Explain various ways of Knowledge Representation with an example of each. (CO4) 10

7-b. Write a short note on logical Connectives- (CO4) 10

a. Implications
b. Biconditional
c. Negation
d. Conjuction
e. Disjunction

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

8-a. What is Dempster-Shafer theory? How does it differ from Bayesian networks? (CO5) 10

8-b. Describe the planning process and the different types of planning techniques used in Artificial Intelligence. (CO5) 10