Printed Page:- 03 Subject Code:- ACSAI0301

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: III - THEORY EXAMINATION (2023-2024)

Subject: Introduction to 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. Who is known as the Father of AI? (CO1) 1

(a) Fisher Ada

(b) Alan Turing

(c) John McCarthy

(d) Allen Newell

1-b. The main function of problem-solving agent is to (CO1) 1

(a) Solve the given problem and reach the goal

(b) Find out which sequence of action will get it to the goal state.

(c) Both a & b

(d) None of the above

1-c. Heuristic function of greedy best-first search denoted as _____. (CO2) 1

(a) f(n) != h(n)

(b) f(n) < h(n)

(c) f(n) = h(n)

(d) f(n) > h(n)

1-d. The search strategy the uses a problem specific knowledge is known as _____.(CO2) 1

(a) Uninformed search

(b) Informed search

(c) Depth-first search
(d) None of the mentioned

1-e. limitation of the semantic networks is- (CO3) 1
(a) Intractability
(b) Lack in expressing some of the properties
(c) Incomplete
(d) Has memory constraints

1-f. _____ graph is used to represent semantic network? (CO3) 1
(a) Undirected graph
(b) Directed graph
(c) Directed Acyclic graph
(d) Directed complete graph

1-g. Bayesian Belief Network is also known as (CO4) 1
(a) Belief network
(b) Decision network
(c) Bayesian model
(d) All of the above

1-h. A rule-based system can be simply created by using(CO4) 1
(a) Assertions
(b) Rules
(c) Set of assertions
(d) All of the above

1-i. To eliminate the inaccuracy problem in planning problem or partial order planning problem we can use (CO5) 1
(a) Stacks
(b) Queues
(c) BST
(d) Planning graphs

1-j. _____ is the composition for agents in artificial intelligence.(CO5) 1
(a) Program
(b) Architecture
(c) Both Program and Architecture
(d) None of the above

2. Attempt all parts:-

2.a. Define Human Intelligence.(CO1) 2

2.b. Explain the state space respresentation .(CO2) 2

2.c. Define Conjunctive Normal Form and Disjunctive Normal Form.(CO3) 2

2.d. Define the approaches to build a knowledge-based agent.(CO4) 2

2.e.	Name various forms of learning.(CO5)	2
SECTION-B		30
3. Answer any five of the following:-		
3-a.	Give a brief introduction to the Turing test in AI? (CO1)	6
3-b.	Explain the different domains of Artificial Intelligence. Also, write some misconception of AI. (CO1)	6
3-c.	Explain the hill climbing algorithm with example. (CO2)	6
3-d.	Explain the DFS algorithm with example.(CO2)	6
3.e.	Translate the following English sentences into Predicate Logic: i.) Everyone is loyal to someone. ii.) All Romans were either loyal to Caesar or hated him. iii.) For every number, there is one and only one immediate successor.(CO3)	6
3.f.	Describe Architecture of Expert System in detail.(CO4)	6
3.g.	Explain Multi-Agent Planning in detail.(CO5)	6
SECTION-C		50
4. Answer any one of the following:-		
4-a.	Explain the different steps to design a well- defined Learning System in detail. (CO1)	10
4-b.	Explain History of Artificial Intelligence in detail. (CO1)	10
5. Answer any one of the following:-		
5-a.	Write down the steps for A* algorithm with example.(CO2)	10
5-b.	Explain the Minimax Algorithm in detail. (CO2)	10
6. Answer any one of the following:-		
6-a.	Explain water jug and monkey banana problems with example. (CO3)	10
6-b.	Explain various ways of Knowledge Representation with an example of each.(CO3)	10
7. Answer any one of the following:-		
7-a.	Explain Forward Chaining and Backward Chaining with diagram.(CO4)	10
7-b.	Explain Frames with suitable example. What are the advantages and disadvantages of frame?(CO4)	10
8. Answer any one of the following:-		
8-a.	Define the Bayesian Network in detail with example. (CO5)	10
8-b.	Explain Fuzzy Logic and Fuzzy sets with suitable example. Which operations can be applied on Fuzzy sets?(CO5)	10