Subject Code:- **ACSAI0301**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)
B.Tech
SEM: III - CARRY OVER THEORY EXAMINATION - APRIL 2023
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.   The action of the Simple reflex agent completely depends upon _____ (CO1)   1

(a) Perception history

(b) Current perception

(c) Learning theory

(d) Utility functions

1-b.   The first AI programming language was called:(CO1)   1

(a) BASIC

(b) FORTRAN

(c) IPL

(d) LISP

1-c.   BFS stand for.(CO2)   1

(a) Behind-first search

(b) Breadth-first search

(c) Back-first search

.

(d) None of the mentioned

1-d. Problem specific knowledge beyond the definition of the problem is used in _____ search.(CO2)   1

     (a) Informed search

     (b) Depth-first search

     (c) Breadth-first search

     (d) Uninformed search

1-e. How do you represent "all dogs have tails"?(CO3)   1

     (a) ∀x: dog(x) has tail(x)

     (b) ∀x: dog(x) has tail(y)

     (c) ∀x: dog(y) has tail(x)

     (d) None

1-f. Knowledge comes from processed information which at the root level comes from the ___.(CO3)   1

     (a) Knowledge

     (b) Intelligence

     (c) Information

     (d) Data

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

     (a) Completely Observable

     (b) Partially Observable

     (c) Neither Completely nor Partially Observable

     (d) Only Completely and Partially Observable

1-h. How many types of rules are there in rule based system?(CO4)   1

     (a) 2

     (b) 3

     (c) 4

     (d) 5

1-i. The process by which the brain orders actions needed to complete a specific task is referred as (CO5)   1

     (a) Planning problem

     (b) Partial order planning

(c) Total order planning

(d) Both Planning problem & Partial order planning

1-j.   Which is used to improve the agents performance (CO5)   1

   (a) Perceiving

   (b) Learning

   (c) Observing

   (d) None of the above

2. Attempt all parts:-

2.a.   Explain Knowledge Pyramid.(CO1)   2

2.b.   What are the three main parts for a search?(CO2)   2

2.c.   Define Partitioned Nets.(CO3)   2

2.d.   What are the various Knowledge Representation Schemes?(CO4)   2

2.e.   What are the three methods of reasoning in Artificial Intelligence?(CO5) 2

SECTION B   30

3. Answer any five of the following:-

3-a.   What are the core components of Learning System? What do you mean by well   6
defined Learning System?(CO1)

3-b.   What is the role of intelligent agent in AI? (CO1)   6

3-c.   What are the basic attributes of types of training in a Learning System? (CO2)   6

3-d.   What are the two branches in Constraint Programming? Briefly explain the   6
difference between these two branches.(CO2)

3.e.   Determine using tableau method, whether the following sets of expressions   6
are mutually inconsistent consistent i.) PVQ, ~PV~Q ii.) P→Q.Q→R, R→S, P→S
iii.) P^~Q, ~P^Q iv.) PVQ, ~P^~Q v.) ~PVQ, Q^~R,R→S, UV~S, P^~U (CO3)

3.f.   Write advantages and disadvantages of Expert system.(CO4)   6

3.g.   Explain the Reinforcement Learning in details.(CO5)   6

SECTION C   50

4. Answer any one of the following:-

4-a.   Discuss the problem solving techniques. Why problem solving is important in   10
AI? (CO1)

4-b.   What are the characteristics of AI problem? Explain with example.(CO1)   10

5. Answer any one of the following:-

5-a.   What is Problem Solving? Explain Heuristic Search techniques.(CO2)   10

5-b.   Write down the difference between BFS and DFS.(CO2)   10

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

6-a.   Explain water jug and monkey banana problems with example. (CO3)   10

6-b.   Explain the algorithm of Resolution in Propositional logic with suitable example.(CO3)   10

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

7-a.   Describe Semantic net and frames with suitable example.(CO4)   10

7-b.   Define Expert System and how it is implemented in real life. Also list its pros and cons.(CO4)   10

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

8-a.   Discuss Probabilistic reasoning in Artificial intelligence in detail.(CO5)   10

8-b.   What are the advantages and disadvantages of Genetic Algorithms? What are the Stopping Conditions that a genetic algorithm may implement?(CO5)   10