Printed Page:- 04 **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 - AUGUST 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 term AI was coined in the year (CO1) 1

(a) 1965

(b) 1956

(c) 1944

(d) 1952

1-b. Which rule is applied for the Simple reflex agent? (CO1) 1

(a) Simple-action rule

(b) Simple & Condition-action rule

(c) Condition-action rule

(d) None of the above

1-c. What is the heuristic function of greedy best-first search? (CO2) 1

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

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

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

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

1-d. Which search is implemented with an empty first-in-first-out queue? (CO2) 1

(a) Depth-first search

(b) Breadth-first search

(c) Bidirectional search

(d) None of the mentioned

1-e. ___ is the ability to acquire new knowledge using automatic methods wherever possible rather than reliance on human intervention. (CO3) 1

(a) Acquisition Efficiency

(b) Inferential Efficiency

(c) Inferential Adequacy

(d) None of the above

1-f. A production system consists of i) A set of rules. ii) One or more databases. iii) A Control Strategy (CO3) 1

(a) i and ii only

(b) ii and iii only

(c) i and iii only

(d) All i, ii and iii

1-g. Morphological Segmentation (CO4) 1

(a) Does Discourse Analysis

(b) Separate words into individual morphemes and identify the class of the morphemes

(c) Is an extension of propositional logic

(d) None

1-h. What is true about semantic net? (CO4) 1

(a) Way of representing knowledge

(b) Semantic network are Data Structure

(c) Semantic network are Data Type

(d) None of the above

1-i. ... cannot represent vague concepts and therefore fails to give the answers on the inconsistencies. (CO5) 1

(a) default logic

(b) Monotonic logic

(c) Non-Monotonic logic

(d) Fuzzy logic

1-j. A … cannot handle reasoning by default because consequences may be derived only because of lack of evidence of the contrary. (CO5) 1

(a) default logic

(b) Monotonic logic

(c) Non-Monotonic logic

(d) Fuzzy Logic

2. Attempt all parts:-

2.a. What is Artificial Intelligence?(CO1) 2

2.b. Write down the names of any 5 informed search. (CO2) 2

2.c. What are the issues in Knowledge Representation? (CO3) 2

2.d. How does Bayesian Networks Work? (CO4) 2

2.e. What do you mean by Simulated Neural Networks? (CO5) 2

SECTION B **30**

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

3-a. Explain intelligent agents and their uses in artificial intelligence? (CO1) 6

3-b. What are some common benefits of artificial intelligence technology? (CO1) 6

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

3-d. Write differences between Uninformed and Informed Search Algorithm. Explain any one informed search technique in detail with algorithm and example. (CO2) 6

3.e. If it is hot, then it is humid. If it is humid, then it will rain. It is hot." Show that "It will rain" using Semantic Tableaux method in Propositional Logic. (CO3) 6

3.f. Explain Data driven and Goal driven approach in Expert System with an example of each. (CO4) 6

3.g. How conditional probability is related to dempster shafer theory? (CO5) 6

SECTION C **50**

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

4-a. What are the different areas where AI has a great impact? Explain in detail. (CO1) 10

4-b. Explain the different steps to design a well- defined Learning System in detail. 10

(CO1)

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

5-a. Alpha-Beta Pruning algorithm is better then Minimax Algorithm. Justify this statement with examples. (CO2) 10

5-b. Describe the Iterative-Deepening Search with examples. (CO2) 10

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

6-a. Determine using resolution by refutation method, whether the following argument is valid or not:- (CO3) 10

- If John lives in England, then he lives in UK.
- John does not live in UK.
- Therefore John does not live in England.

6-b. Consider the facts below and find answer to the question: "Was Marcus loyal to Caesar" (CO3) 10

1. Marcus was a man.

2. Marcus was a Pompeian.

3. All Pompeians were Romans.

4. Caesar was a ruler.

5. All Romans were either loyal to Caesar or hated him. 6. Everyone is loyal to someone.

7. People only try to assassinate rulers they are not loyal to. 8. Marcus tried to assassinate Caesar. 9. All men are people.

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

7-a. Explain the operations performed by agent to show the intelligent behaviour through practical example. (CO4) 10

7-b. What is Expert System? Explain its various parts. (CO4) 10

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

8-a. Explain different types of Machine Learning algorithms in detail. (CO5) 10

8-b. How is Deep Learning better than Machine Learning? What are some of the most used applications of Deep Learning? (CO5) 10