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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. Who proposed the question "Can Machine Think"? (CO1) 1
- (a) Alan Turing
 - (b) Marvin Minsky
 - (c) John McCarthy
 - (d) Thomas Bayes
- 1-b. Who coined the term 'Artificial Intelligence'? (CO1) 1
- (a) Fisher Ada
 - (b) John McCarthy
 - (c) Allen Newell
 - (d) Alan Turning
- 1-c. A* algorithm is based on _____. (CO2) 1
- (a) Breadth-First-Search
 - (b) Depth-First –Search
 - (c) Best-First-Search
 - (d) Hill climbing
- 1-d. What is the time complexity of Breath-first search? (CO2) 1
- (a) O (b)
 - (b) O (b^d)
 - (c) O (b^l)

- (d) O (d)
- 1-e. ' \wedge ' is the logical symbol of _____ (CO3) 1
- (a) Conjunction
 - (b) Disjunction
 - (c) Negation
 - (d) Implication
- 1-f. What is a Semantic Network? (CO3) 1
- (a) Data Type
 - (b) A Technique of knowledge representation
 - (c) Best algorithm
 - (d) Logical tool
- 1-g. Which of the following are Components of Expert Systems? (CO4) 1
- (a) Knowledge Base
 - (b) Inference Engine
 - (c) User Interface
 - (d) All of the above
- 1-h. Forward chaining systems are _____. (CO4) 1
- (a) Top-down approach
 - (b) Top-up approach
 - (c) Bottom-up approach
 - (d) None of the above
- 1-i. Q-Learning is a _____ algorithm. (CO5) 1
- (a) Active learning
 - (b) Supervised learning
 - (c) Reinforcement learning
 - (d) Unsupervised learning
- 1-j. _____ technique used to identify Spam or Not spam Email. (CO5) 1
- (a) Clustering
 - (b) Classification
 - (c) Regression
 - (d) Association
2. Attempt all parts:-
- 2.a. What do you mean by 'Turing Machine'? (CO1) 2
- 2.b. What is Local Search? (CO2) 2
- 2.c. Define the term 'Uncertainty'. (CO3) 2
- 2.d. Define unconditional probability and its formula. (CO4) 2
- 2.e. Write the full form of BNN, ANN, RNN & CNN. (CO5) 2

SECTION-B

30

3. Answer any five of the following:-

- 3-a. Explain the structure of Intelligent agent with diagram. (CO1) 6
- 3-b. Discuss the various approaches of Artificial Intelligence with example. (CO1) 6
- 3-c. Explain the breath first search algorithm with suitable graph. (CO2) 6
- 3-d. What is Mini-Max Algorithm in AI? Explain the working of Minimax Algorithm.. (CO2) 6
- 3.e. How to solve 4 Queen problem in Artificial Intelligence? (CO3) 6
- 3.f. Describe architecture of expert system. (CO4) 6
- 3.g. Discuss the different types of machine learning techniques with example. (CO5) 6

SECTION-C

50

4. Answer any one of the following:-

- 4-a. Define the intelligent agent and also explain the concept of goal based agent with suitable example. (CO1) 10
- 4-b. What is Artificial Intelligence? Give an example of where AI is used on a daily basis (CO1) 10

5. Answer any one of the following:-

- 5-a. Explain Best First Search technique with suitable example. (CO2) 10
- 5-b. Differentiate between Informed & Uninformed search. Give examples. (CO2) 10

6. Answer any one of the following:-

- 6-a. Explain missionaries and cannibals problem in Artificial Intelligence? (CO3) 10
- 6-b. Explain Propositional Logic. Write the name of logical connectives with symbol in Propositional Logic. (CO3) 10

7. Answer any one of the following:-

- 7-a. Explain the architecture of knowledge based system. (CO4) 10
- 7-b. Describe the backward chaining or reasoning with example. (CO4) 10

8. Answer any one of the following:-

- 8-a. What is supervised learning? Explain the techniques of supervised learning with example. (CO5) 10
- 8-b. What is planning? Explain the conditional planning with example. (CO5) 10