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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MCA

SEM: IV - 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 Artificial Intelligence?(CO1) 1
- (a) Playing a game on Computer
 - (b) Making a machine Intelligent
 - (c) Programming on Machine with your Own Intelligence
 - (d) Putting your intelligence in Machine
- 1-b. Which of the given language is not commonly used for AI?(CO1) 1
- (a) LISP
 - (b) PROLOG
 - (c) Python
 - (d) Perl
- 1-c. What is the complexity of minimax algorithm?(CO2) 1
- (a) Same as of DFS
 - (b) Space – bm and time – bm
 - (c) Time – bm and space – bm
 - (d) None of the mentioned
- 1-d. Which of the following is/are Uninformed Search technique/techniques?(CO2) 1
- (a) Breadth First Search (BFS)
 - (b) Depth-first search
 - (c) Bidirectional Search

- (d) All of the mentioned
- 1-e. Which of the following option is used to build complex sentences in knowledge representation?(CO3) 1
- (a) Symbols
- (b) Connectives
- (c) Quantifier
- (d) None of the above
- 1-f. For propositional Logic, which statement is false?(CO3) 1
- (a) The sentences of Propositional logic can have answers other than True or False.
- (b) Each sentence is a declarative sentence.
- (c) Propositional logic is a knowledge representation technique in AI.
- (d) None of the above
- 1-g. Which of the following is not type of learning(CO4) 1
- (a) Supervised learning
- (b) Unsupervised Learning
- (c) Reinforcement Learning
- (d) Semi-unsupervised learning
- 1-h. What is Machine Learning (ML)?(CO4) 1
- (a) The autonomous acquisition of knowledge through the use of manual programs
- (b) The selective acquisition of knowledge through the use of computer programs
- (c) The selective acquisition of knowledge through the use of manual programs
- (d) The autonomous acquisition of knowledge through the use of computer programs
- 1-i. Which of the following is an examples of Pattern Recognition?(CO5) 1
- (a) Speech recognition
- (b) Speaker identification
- (c) MDR
- (d) All of the above
- 1-j. Which of the following is disadvantages pattern recognition? (CO5) 1
- (a) Syntactic Pattern recognition approach is complex to implement
- (b) It is very slow process
- (c) Sometime to get better accuracy, larger dataset is required
- (d) All of the above
2. Attempt all parts:-
- 2.a. What is agent in artificial intelligence?(CO1) 2
- 2.b. Define the two-parameter used in alpha-beta pruning algorithm.(CO2) 2
- 2.c. How Bayesian network is constructed? Explain with an example.(CO3) 2
- 2.d. List various types of machine learning.(CO4) 2

2.e.	What are Limitations of PCA?(CO5)	2
SECTION-B		30
3. Answer any <u>five</u> of the following:-		
3-a.	Explain the different domains of Artificial Intelligence. Also, write some misconception of AI. (CO1)	6
3-b.	Define Artificial Intelligence. Explain the behaviors of the AI. What do you mean by Turing Test? Explain it. (CO1)	6
3-c.	Explain the alpha-beta algorithms with suitable example. (CO2)	6
3-d.	Explain any Heuristic search algorithm in detail with suitable example.(CO2)	6
3.e.	What are limitations of propositional logic.(CO3)	6
3.f.	Explain k-means algorithm in detail.(CO4)	6
3.g.	Write a short note on Linear Discriminant Analysis (LDA).(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?(CO1)	10
4-b.	How Artificial intelligence, Machine Learning, and Deep Learning differ from each other?(CO1)	10
5. Answer any <u>one</u> of the following:-		
5-a.	Describe the Iterative-Deepening Search with example.(CO2)	10
5-b.	Alpha-Beta Pruning algorithm is better then Minimax. Justify this statement with example.(CO2)	10
6. Answer any <u>one</u> of the following:-		
6-a.	Explain Forward Chaining and Backward Chaining with diagram.(CO3)	10
6-b.	Draw and explain the architecture of Knowledge Based System.(CO3)	10
7. Answer any <u>one</u> of the following:-		
7-a.	What is clustering ?Describe k-mean clustering technique.(CO4)	10
7-b.	Explain the classification of Machine Learning in detail.(CO4)	10
8. Answer any <u>one</u> of the following:-		
8-a.	Explain speech recognition in detail. Write its applications.(CO5)	10
8-b.	Describe in brief the various feature extraction and selection methods in pattern recognition.(CO5)	10