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B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Seventh Semester

18EEE424T - ARTIFICIAL INTELLIGENCE

(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

PART - A (20 × 1 = 20 Marks)

Answer **all** Questions

		Marks	BL	CO
1.	The "Father of Artificial Intelligence" is _____ (A) Fisher Ada (B) Alan Turing (C) John McCarthy (D) Allen Newell	1	1	1
2.	The process of removing detail from a given state representation is called _____ (A) Extraction (B) Abstraction (C) Information Retrieval (D) Mining of data	1	2	1
3.	The proposition symbols in AI are (A) True and False (B) True, False, and Null (C) True (D) False	1	1	1
4.	Blind Search can be used for which of the following situations? (A) Real-life situation (B) Small Search Space (C) Complex game (D) Larger Search space	1	2	1
5.	..... algorithm is used in the Game tree to make decisions of Win/Lose? (A) Heuristic Search Algorithm (B) DFS/BFS algorithm (C) Greedy Search Algorithm (D) Min/Max algorithm	1	2	2
6.	The search algorithm, which is similar to the min-max search, but removes the branches that don't affect the final output is known as__. (A) Depth-first search (B) Breadth-first search (C) Alpha-beta pruning (D) Maxmin search	1	3	2
7.	The total number of proposition symbols in AI are _____ (A) Three proposition symbols (B) One proposition symbol (C) Two proposition symbols (D) No proposition symbol	1	1	2
8.	Inference engines ..... (A) work on the principle of Forward chaining (B) work on the principle of Backward chaining (C) work on the principle of Both forward chaining and backward chaining (D) Does not work on the principle of chaining	1	2	2
9.	Which of the following are the two major characteristics which combine the AI Planning problem? (A) FOL and Logic (B) Logic and Knowledge Based Systems (C) Search and Logic (D) Knowledge Based Systems	1	1	3

10.	Planning graphs consists of ____ (A) a sequence of levels (B) a sequence of actions which corresponds to the state of the system (C) a sequence of levels which corresponds to time steps in the plan (D) a sequence of states	1	2	3
11.	Incorrect information consequences in unhappy preconditions for actions and plans ..... detects violations of the preconditions for fruitful completion of the plan. (A) Execution monitoring (B) Conformant Planning (C) Conditional Plan (D) Both Execution monitoring and Conditional Plan	1	2	3
12.	Wumpus World is a classic problem, the best example of _____ (A) Single player Game (B) Two player Game (C) Reasoning with Knowledge (D) Knowledge based Game	1	3	3
13.	The first widely-used commercial form of Artificial Intelligence (AI) is being used in many popular products like microwave ovens, automobiles, and plug-in circuit boards for desktop PCs. It allows machines to handle vague information with a deftness that mimics human intuition. What is the name of this Artificial Intelligence? (A) Boolean logic (B) Human logic (C) Fuzzy logic (D) Functional logic	1	1	4
14.	A _____ is used to demonstrate, on a purely syntactic basis, that one formula is a logical consequence of another formula (A) Deductive Systems (B) Reasoning with Knowledge Based Systems (C) Search Based Systems (D) Inductive Systems	1	3	4
15.	In which of the following learning the teacher returns reward and punishment to learner? (A) Active learning (B) Reinforcement learning (C) Supervised learning (D) Unsupervised learning	1	1	4
16.	..... is also called exploratory learning. (A) Supervised learning (B) Active learning (C) Unsupervised learning (D) Reinforcement learning	1	1	4
17.	Different learning methods does not include ..... (A) Memorization (B) Analogy (C) Deduction (D) Introduction	1	1	5
18.	Neural Networks are complex _____with many parameters. (A) Linear Functions (B) Nonlinear Functions (C) Discrete Functions (D) Exponential Functions	1	2	5
19.	A perceptron is a _____ (A) Feed-forward neural network (B) Backpropagation algorithm (C) Backtracking algorithm (D) Feed Forward-backward algorithm	1	2	5
20.	The network that involves backward links from output to the input and hidden layers is called _____ (A) Self organizing maps (B) Perceptrons (C) Recurrent neural network (D) Multi layered perceptron	1	4	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	Explain the functionality of the problem-solving agent with a neat diagram	4	1	1

22.	List the four parameters required for evaluating the algorithm's performance	4	2	1
23.	Differentiate forward chaining and Backward chaining approaches in AI	4	4	2
24.	Discuss the advantages and disadvantages of monotonic Reasoning.	4	1	3
25.	How data can be grouped as under-fitting and over-fitting? Explain with a neat diagram	4	2	4
26.	Brief on Perceptron model.	4	4	5
27.	What is linear and logistic regression?	4	3	5

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO
28.	(a) Discuss the breadth first and depth first search strategies with examples.	12	3	1
	(OR)			
	(b) Elaborate the Model-based and goal-based Agents with suitable examples.			
29.	(a) Discuss the various types of Reasoning in AI	12	4	2
	(OR)			
	(b) Explain in detail alpha-beta pruning algorithm with an example			
30.	(a) Illustrate the different planning methods adopted to handle real-time indeterminate problems with example.	12	3	3
	(OR)			
	(b) i) state the axioms of probability ii) Using Bayes theorem solve the following problem. A doctor knows that the disease meningitis causes the patient to have a stiff neck, say 50 % of the time. The doctor also knows some unconditional facts: the prior probability of a patient having meningitis is 1/50,000 and the prior probability of any patient having a stiff neck is 1/30			
31.	(a) Elaborate the approach of learning decision trees with a real-time example.	12	3	4
	(OR)			
	(b) Discuss probabilistic inference in belief networks.			
32.	(a) Explain the backpropagation algorithm.	12	3	5
	(OR)			
	(b) Discuss regression and also discuss about the bias and variance of the regression problem.			

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