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B.Tech DEGREE EXAMINATION, MAY 2024

Fourth Semester

18AIC201J - FOUNDATION OF ARTIFICIAL INTELLIGENCE

(For the candidates admitted during the academic year 2018-2019 to 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.	Artificial Intelligence is about_____ (A) Making an Intelligent machine (B) Playing a game on a Computer (C) Programming on a machine with your own intelligence (D) Putting your intelligence alone in a machine	1	1	1
2.	A* algorithm is based on _____ (A) Breadth-First Search (B) Depth-First Search (C) Best-First Search (D) Hill climbing	1	1	1
3.	The Turing test considers _____of the following trait as evidence of machine intelligence. (A) Acting humanly (B) Thinking humanly (C) Acting rationally (D) Thinking rationally	1	1	1
4.	Who is known as the "Father of AI"? (A) Fisher Ada (B) Alan Turing (C) John McCarthy (D) Allen Newell	1	1	1
5.	To which depth can the alpha-beta pruning be applied? (A) 10 states (B) 8 states (C) 6 states (D) any depth	1	1	2
6.	How can we consider the goal in backward chaining AI Algorithms? (A) Queue (B) Stack (C) Vector (D) Linked list	1	1	2
7.	How many possible sources of complexity are there in forward chaining? (A) 1 (B) 2 (C) 3 (D) 4	1	1	2
8.	Forward chaining systems are _____, whereas backward chaining systems are _____ (A) Goal-driven, goal-driven (B) Goal-driven, data-driven (C) Data-driven, goal-driven (D) Data-driven, data-driven	1	1	2
9.	_____ are the compositions for Artificial Intelligence Agents. (A) Only Program (B) Only architecture (C) Only sensors (D) Both Program and Architecture	1	1	3
10.	In linguistic morphology, _____is the process of reducing inflected words to their root form. (A) Rooting (B) Stemming (C) Text-Proofing (D) Fuzzy logic	1	1	3

11.	SOAR stands for (A) State-Object-And-Result (B) System-Object-And-Resource (C) State-Operator-And-Result (D) State-Operator-Agent-Result	1	1	3
12.	A frequent form of interaction that occurs among agents with different goals is termed as (A) Bargaining (B) Negotiation (C) Argumentation (D) Combination	1	1	3
13.	In a partial-order plan, A. Relationships between the actions of the behavior are set before the actions. B. Relationships between the actions of the behavior are not set until necessary. Choose the correct option: (A) A is true (B) B is true (C) Either A or B can be true depending on the situation (D) Neither A nor B is true	1	1	4
14.	The adjective "first-order" distinguishes first-order logic from _____ in which there are predicates having predicates or functions as arguments or in which one or both predicate quantifiers or function quantifiers are permitted. (A) Representational Verification (B) Representational Adequacy (C) Higher-Order Logic (D) Inferential Efficiency	1	1	4
15.	If a machine can change its course of action based on the external environment on its own, then the machine is called_____ (A) Mobile agent (B) Intelligent agent (C) Algorithm agent (D) Operating agent	1	1	4
16.	_____Graph is used to represent semantic network. (A) Undirected graph (B) Directed graph (C) Directed Acyclic graph (DAG) (D) Directed complete graph	1	1	4
17.	_____uses the problem specific knowledge beyond the definition of the problem. (A) Informed search (B) Depth-first search (C) Breadth-first search (D) Uninformed search	1	1	5
18.	Main point of difference between human & machine intelligence is_____ (A) human perceive everything as a pattern while machines perceive it merely as data (B) human have emotions (C) human have more IQ & intellect (D) human have sense organs	1	1	5
19.	A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization, the output will be zero when and only when the input is? (A) 000 or 110 or 011 or 101 (B) 010 or 100 or 110 or 101 (C) 000 or 010 or 110 or 100 (D) 100 or 111 or 101 or 001	1	1	6
20.	In many problems, the path to the goal is irrelevant. This class of problems can be solved using _____ (A) Informed Search Techniques (B) Uninformed Search Techniques (C) Local Search Techniques (D) Informed & Uninformed Search Techniques	1	1	6

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	How is a problem formally defined? List down the components of it.	4	1	1
22.	Clearly illustrate the specific need for Constraint Satisfactory Problems.	4	3	1
23.	Illustrate the use of First-order logic to represent knowledge.	4	3	2

		Marks	BL	CO
24.	Represent the following sentence in predicate form: 1. "All the children like sweets" 2. "Everyone likes cricket, but few likes hockey."	4	3	3
25.	Analyze the concepts of planning.	4	3	5
26.	Relate first-order logic with proposition logic.	4	3	6
27.	Write notes on the genetic algorithm.	4	1	6

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO
28.	(a) Examine the PEAS specification of the task environment of an agent.	12	3	1
	(OR)			
	(b) Explain the cryptarithmetic problem for the below Problem: SEND +MORE ..... Initial state: MONEY No two letters have the same value. The sums of the digits must be shown in the problem.			
29.	(a) Consider the following sentences: • John likes all kinds of food • Apples are food • Chicken is food • Anything anyone eats and isn't killed is food • Bill eats peanuts and is still alive • Sue eats everything Bill eats (i)Translate these sentences into formulae in predicate logic. (ii) Convert the above FOL into clause form.	12	5	2
	(OR)			
	(b) In detail discuss with an example the use of a unification algorithm to prove the concept of resolution.			
30.	(a) Examine the Argumentation among Agents, with suitable examples.	12	4	3
	(OR)			
	(b) Define Agent Communication. Write a short note on coordination, Dimensions of meaning, and Message types.			
31.	(a) Illustrate Conceptual graphs and hierarchies in the domain.	12	4	4
	(OR)			
	(b) Write about knowledge-based reasoning and agents with real time examples.			
32.	(a) Summarize the genetic algorithm in detail, with an example.	12	5	5
	(OR)			
	(b) Explain the concepts of Hill climbing. Write an algorithm for steepest ascent hill climbing.			

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