Reg. No															

B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Seventh Semester

18BME466T - ARTIFICIAL INTELLIGENCE IN HEALTH CARE

(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.	Which type of intelligent agent focuses on selecting actions that maximize a predefined measure of success or satisfaction? (A) Simple reflex agents (B) Model-based agents (C) Goal-based agents (D) Utility-based agents	1	2	1
2.	What is meant by agent's percept sequence? (A) Used to perceive the environment (B) Complete history of actuator (C) Complete history of perceived things (D) Future events of the environment	1	1	1
3.	In which agent does the problem generator is present? (A) Learning agent (B) Observing agent (C) Reflex agent (D) Uniform agent	1	2	1
4.	_____ search method does not care about number of steps, but only about the cost. (A) Depth first search (B) Breadth first search (C) Uniform cost search (D) Depth limited search	1	2	1
5.	Which search is complete and optimal when h(n) is consistent? (A) Depth-first search (B) Best-first search (C) Iterative search (D) A* search	1	3	2
6.	Which search method will expand the node that is closest to the goal? (A) Best-first search (B) Greedy best-first search (C) A* search (D) Breadth first search	1	1	2
7.	What is the evaluation function in A* approach? (A) Heuristic function (B) Path cost from start node to current node (C) Path cost from start node to current node + Heuristic cost (D) Average of Path cost from start node to current node and Heuristic cost	1	2	2
8.	Heuristic function h(n) is _____ (A) Lowest path cost (B) Cheapest path from root to goal node (C) Estimated cost of cheapest path from root to goal node (D) Average path cost	1	1	2
9.	What are you predicating by the logic: ∀x: ∃y: loyalto(x, y) (A) Everyone is loyal to some one (B) Everyone is loyal to all (C) Everyone is not loyal to someone (D) Everyone is loyal	1	3	3

10.	∀ x Likes(x, IceCream) is eqyuivalent to (A) ∃ x ¯Likes(x, IceCream) (B) ¯∀ x ¯Likes(x, IceCream) (C) ¯∃ x Likes(x, IceCream) (D) ¯∃ x ¯Likes(x, IceCream)	1	1	3
11.	∀ p, c Parent(p, c) ⇔ Child (c, p) logic represents that (A) Parent and child are equivalent (B) Parent and child are in inverse relation (C) Parent and child are in opposite relation (D) Parent and child are in implies relation	1	3	3
12.	The _____ define natural numbers and addition (A) Domain axioms (B) Equality axioms (C) Natural axioms (D) Peano axioms	1	1	3
13.	Extraction of features from data and transforming them into formats that are suitable for ML algorithms is called_____ (A) Feature Transform (B) Feature Engineering (C) Feature Encoding (D) Feature selection	1	1	4
14.	____ machine learning algorithm can easily adapt onto unseen data (A) SVM (B) KNN (C) LoR (D) DT	1	1	4
15.	Which of the following is a type of neural network? (A) Decision Tree (B) Random Forest (C) Convolutional neural network (D) Linear regression	1	1	4
16.	The process of understanding the meaning and interpretation of words , signs and sentence structure is called_____ (A) Tokenization (B) Lexical analysis (C) Semantic analysis (D) Sentiment analysis	1	2	4
17.	____ module is used to classify whether the recently posted data indicates disease or not (A) Data processing module (B) Computational module (C) Database module (D) Administrator module	1	1	5
18.	_____ stage of DL extracts important features from the image (A) Flattening (B) Full Connection (C) Pooling (D) Convolution	1	1	5
19.	____ curtails the dimensionality of each feature map but retains significant information (A) Spatial Pooling (B) Max Pooling (C) Sum Pooling (D) Average Pooling	1	1	5
20.	The model that employ specified coding languages and hardware into the cloud computing infrastructure which empower the users to imply and develop various applications (A) Infrastructure as a Service (B) Platform as a Service (C) Software as a Service (D) System as Service	1	1	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	What are the types of depth-first search techniques? Elaborate on ONE of them.	4	2	1
22.	When is an environment strategic? Differentiate Single-agent and multiagent environments.	4	3	1
23.	During what situation the hill climbing search technique is unable to find best solution. explain.	4	2	2
24.	Consider the Wumpus world as shown ,describe PEAS for the task environment.	4	1	2

25.	Describe the formal grammar of the first order logic.	4	1	3
26.	Represent the following in predicate logic. 1. Two sets are equal if and only if each is a subset of the other 2. An object is in the union of two sets if and only if it is a member of either set	4	1	4
27.	What are the components of DDS architecture?	4	1	5

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO
28.	(a) Illustrate the strategies under uninformed search.	12	2	1
	(OR)			
	(b) (i) Discuss the architecture of the intelligent agent. (5 Marks) (ii) Explain the various components and their role in decision making. (4 Marks) (iii) Use a example to illustrate how these components work together in an agent's operation. (3 marks)			
29.	(a) Explain the algorithm of A* search algorithm with a example.	12	2	2
	(OR)			
	(b) (i) Explain the concept of logical equality in propositional logic. (4 Marks) (ii) Prove the logical equivalence of the following propositions using truth tables (8 Marks)			
30.	(a) (i) Discuss the difference between first order logic and proportional logic.(6 Marks) (ii) Describe the role of quantifiers in quantifying the variables and the relation between them. (6 marks)	12	2	4
	(OR)			
	(b) Elaborate on the stages in knowledge engineering problem of circuit design.			
31.	(a) (i) List out the challenges in machine learning with healthcare sector. (4 marks) (ii) Illustrate the architecture of patient centric model. (8 marks)	12	1	4
	(OR)			
	(b) With usecase, detail on the use of linear regression model to solve a problem in healthcare.			
32.	(a) Describe the architecture of DDS and its implementation in healthcare diagnostics.	12	3	5
	(OR)			
	(b) (i) Explain the fundamental principle of cloud computing. (3 marks) (ii) What are the key characteristics, service models and deployment models that define cloud computing. (6 marks) (iii) Provide a example in healthcare. (3 Marks)			

* * * * *