29. a.	Consider the following sentences: • John like 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 first order logic into clause form.	12	5	2	2
	(OR)				
b.	Explain the use of a unification algorithm to prove the concept of resolution with an example.	12	4	2	2
30. a.	Design the architecture of the intelligent agent with an example.	12	6	3	3
	(OR)				
b.	Describe the trust and reputation in multi-agent systems.	12	2	3	3
31. a.	Illustrate Conceptual graphs and hierarchies in the domain with examples.	12	4	4	2
	(OR)				
b.	Discuss in detail about knowledge-based reasoning and agents.	12	4	4	2
32. a.	Construct a graph with six nodes and demonstrate the "Travelling salesman" problem.	12	5	5	4
	(OR)				
b.	Explain Ant colony optimization with an example.	12	3	5	4

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Reg. No.															

B.Tech. DEGREE EXAMINATION, MAY 2023
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 & 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	PO
1.	Identify the computer system which beat Gary Kasparov in a chess game in 1997. (A) Shakey (B) Deep Thought (C) Deep Blue (D) STRIPS	1	1	1	1
2.	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	1
3.	The other name of the informed search strategy is_____ (A) Simple search (B) Heuristic search (C) Online search (D) Alpha search	1	1	1	4
4.	A* algorithm is based on _____ (A) Breadth-First Search (B) Depth-First Search (C) Best-First Search (D) Hill climbing	1	1	1	3
5.	Translate the following statement into First order logic. "For every 'A', if A is a philosopher, then a is a scholar". (A) ∀ A philosopher(A) scholar() (B) ∃ a philosopher(a) scholar(a) (C) ┌ philosopher(a) scholar(a) (D) ^ scholar(a) philosopher(a)	1	1	2	2
6.	Identify the possible sources of complexity in forward chaining. (A) 1 (B) 2 (C) 3 (D) 4	1	1	2	2
7.	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	1

8. _____ search equals minimax search but eliminates the branches that can't influence the final decision. 1 1 2 2
   (A) Depth-first search (B) Breadth-first search
   (C) Alpha-beta pruning (D) A* Search

9. Identify the compositions for Artificial Intelligence Agents. 1 1 3 2
   (A) Only Program (B) Only Architecture
   (C) Only Sensors (D) Both Program and Architecture

10. In linguistic morphology, _____is the process of reducing inflected words to their root form. 1 1 3 1
   (A) Rooting (B) Stemming
   (C) Text-Proofing (D) Fuzzy logic

11. An algorithm is complete if _____ 1 1 3 3
   (A) It terminates with a solution when one exists (B) It starts with a solution
   (C) It does not terminate with a solution (D) It has a loop

12. _____ of the following is the branch of AI. 1 1 3 3
   (A) Machine learning (B) Cyber forensics
   (C) Full stack developer (D) Network design

13. Choose the correct option. 1 1 4 2
   A) Knowledge base (KB) consists of a set of statements.
   B) Inference is deriving a new sentence from the KB.
   (A) A is true, B is true (B) A is false, B is false
   (C) A is true, B is false (D) A is false, B is true

14. Consider Wumpus World classic problem and it is the best example of _____ 1 1 4 2
   (A) Single player Game (B) Two player Game
   (C) Reasoning with Knowledge (D) Knowledge-based Game

15. Consider a machine can change its course of action based on the external environment on its own. Then the machine is called_____ 1 1 4 2
   (A) Mobile agent (B) Intelligent agent
   (C) Algorithm agent (D) Operating agent

16. _____graph is used to represent semantic network. 1 1 4 2
   (A) Undirected graph (B) Directed graph
   (C) Directed Acyclic graph (DAG) (D) Directed complete graph

17. An auto-associative network is_____ 1 1 5 3
   (A) a neural network that contains no loops (B) a neural network that contains feedback
   (C) a neural network that has only one loop (D) a single-layer feed-forward neural network with pre-processing

18. _____uses the problem specific knowledge beyond the definition of the problem. 1 1 5 2
   (A) Informed search (B) Depth-first search
   (C) Breadth-first search (D) Uninformed search

19. The main difference between human & machine intelligence is _____ 1 1 6 2
   (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

20. The Data structure used in the standard implementation of Breadth First Search is_____ 1 1 6 2
   (A) Stack (B) Queue
   (C) Linked List (D) Tree

PART – B (5 × 4 = 20 Marks) Marks BL CO PO
Answer **ANY FIVE** Questions

21. List the importance of performing the Turing test. Identify the capabilities of computers need to pass the total Turing test. 4 1 1 1

22. Discuss the best-first search technique with an example. 4 2 1 4

23. Illustrate the use of First order logic to represent knowledge. 4 3 2 2

24. Represent the following sentence in predicate form: 4 3 3 2
   (i) "All the children like sweets"
   (ii) "Everyone likes cricket, but few likes hockey."

25. Compare and contrast the negotiation and bargaining. 4 4 4 3

26. Brief about formal logic and propositional logic. 4 2 5 2

27. Write a note on the genetic algorithm. 4 1 6 4

PART – C (5 × 12 = 60 Marks) Marks BL CO PO
Answer **ALL** Questions

28. a. Describe how problem-solving agents are solving contingency problems differently from the ones solving exploratory issues. 12 3 1 1

(OR)

b. Explain the crypt arithmetic problem for the following: 12 4 1 1

+BASE
BALL
.....
Initial State: GAMES

No two letters have the same value. The sums of the digits must be shown in the problem.