



GIET UNIVERSITY, GUNUPUR – 765022

B. C. A (Fifth Semester) Examinations, November - 2023

BCA20501 – Artificial Intelligence

Time: 3 hrs

Maximum: 70 Marks

Answer all questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)

(1 x 10 = 10 Marks)

Q. 1 Answer **ALL** questions

	CO #	PO #
Which of the following is an Actuator?	CO1	PO1
a. (i) Motor (ii) Infrared Range Finder (iii) Mic (iv) Camera		
b. The minimum number of participants required in Turing test (i) 2 (ii) 3 (iii) 4 (iv) 1	CO1	PO1
c. Minimax is also known as- (i) Infinite Point (ii) Alfa-Beta (iii) Small Game (iv) Saddle Point	CO2	PO1
d. Which game has various unpredictable events and has a factor of chance or luck? (i) Imperfect information (ii) Deterministic (iii) Perfect information (iv) Non-Deterministic	CO2	PO1
e. Decision tree is mostly used for? (i) Regression (ii) Classification (iii) Substitution (iv) Transposition	CO3	PO1
f. “Every man respects his parents”, is this following statement the predicate is- (i) Respects (ii) Man (iii) Parents (iv) Every	CO3	PO1
g. Which of the following ES was developed to determine the type and level of lung Cancer- (i) MYCIN (ii) CaDeT (iii) DENDRAL (iv) PXDES	CO4	PO1
h. Which type of knowledge is based on practice, evaluation and experience? (i) Factual (ii) Heuristic (iii) Procedural (iv) Structural	CO4	PO1
i. Which of the following is not an Informed Search approach? (i) Iterative Deepening DFS (ii) Depth Limited Search (iii) Greedy BFS (iv) Uniform Cost Search	CO1	PO1
j. Conflicting goals give rise to which type of search? (i) Informed (ii) Adversarial (iii) Uninformed (iv) Heuristic	CO2	PO1

PART – B: (Short Answer Questions)

(2 x 10 = 20 Marks)

Q.2. Answer **ALL** questions

	CO #	PO #
a. What are the goals of AI?	CO1	PO1
b. What is N-Queens Problem?	CO1	PO1
c. Differentiate between Atomic and Compound Propositions.	CO2	PO1

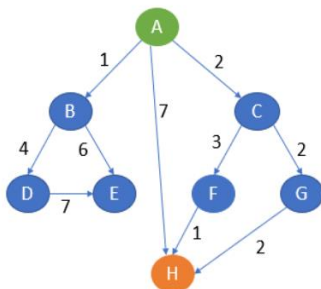
- d. How is Adversarial search strategy different from other general search strategies? CO2 PO1
- e. Represent the following statements in Predicate logic form using the appropriate quantifier. CO3 PO1
- “Not all students like both Mathematics and Science”
 - “Some boys are intelligent”
- f. From the following statement, identify the predicate, variable and quantifier - “All men drink coffee”. CO3 PO1
- g. What is DENDRAL? CO4 PO1
- h. What do you mean by Heuristic Knowledge? CO4 PO1
- i. What is Turing Test? CO1 PO1
- j. Define Structural Knowledge. CO2 PO1

PART – C: (Long Answer Questions)

(10 x 4 = 40 Marks)

Answer **ALL** questions

- 3.a. Write a short note on Marks 5 CO # CO1 PO # PO1
- Travelling Salesman Problem
 - Genetic Algorithm
- b. Write a short note on Hill Climbing in AI with a neat diagram. Describe the problems with the hill climbing. 5 CO1 PO2
- (OR)**
- c. What are Informed Search Algorithms? Find the path of traversal if A is the start state and H is the goal state using A* search. Explain the steps as well. 10 CO1 PO2



NODES	HEURISTICS
A	5
B	3
C	4
D	2
E	6
F	3
G	1
H	0

- 4.a. Write a short note on- Marks 5 CO1 PO1
- Production Rules
 - Alpha-Beta Pruning
- b. What is Knowledge Representation? Explain the different types of Knowledge. 5 CO2 PO2
- (OR)**
- c. Explain the types of Games in AI. What are the elements of the Game Playing Search? 5 CO2 PO2
- d. What is a Propositional Logic? Explain and draw the Truth table for each Logical Connectives. 5 CO2 PO2
- 5.a. Write a short note on- Marks 5 CO3 PO1
- Goals of Computational Learning Theory
 - Ensemble Learning
- b. What are Decision Trees? Explain the decision-making process in Decision Trees with a neat diagram. 5 CO3 PO2
- (OR)**
- c. Given below are some statements, represent them using Instance and ISA relationships. Explain the initial steps or representation. 10 CO3 PO2
- Marcus was a man
 - Marcus was a Pompeian
 - All Pompeians were Romans

4. Caesar was a ruler
5. All Pompeians were either loyal to Caesar or hated him
- 6.a (i) Let's suppose we are taking an entity, Michael. Michael is a doctor as a profession, and his age is 25, he lives in city Chicago, and the country is USA, his salary is \$10000. Represent the following information using Frame Representation. 10 CO4 PO1
- (ii) Represent the following statements in the form of nodes and arcs using Semantic Network-
- Jerry is a cat.
 - Jerry is a mammal
 - Jerry is owned by Priya.
 - Jerry is brown colored.
 - All Mammals are animal.
- (OR)**
- b. Describe Expert System Shells with a neat diagram. What are the applications of ES? 5 CO4 PO2
- c. How Domain Knowledge is represented and used in ES? 5 CO4 PO2

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