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Question Paper Code	12700
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B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Sixth Semester

**Computer Science and Business Systems
20CBPC603 - ARTIFICIAL INTELLIGENCE**

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

	Marks	K- Level	CO
1. What is meant by Turing test?	2	K1	CO1
2. What is the fundamental difference between an intelligent agent and a simple agent?	2	K1	CO1
3. Compare BFS & DFS.	2	K2	CO2
4. Compare Uninformed Search (Blind search) and informed Search (Heuristic Search) strategies.	2	K2	CO2
5. What is backtracking search?	2	K1	CO3
6. Explain the adversarial search.	2	K2	CO3
7. Explain the propositional logic.	2	K2	CO4
8. What is Knowledge representation?	2	K1	CO4
9. Define Bayesian belief network.	2	K1	CO5
10. What are the Components of Expert Systems?	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Explain types of Environments and its properties.	13	K2	CO1
OR			
b) Demonstrate State space search with examples like Maze & 15 puzzle problem.	13	K2	CO1
12. a) Explain AO* algorithm with an example.	13	K2	CO2
OR			
b) What are the five uninformed search strategies? Explain any two in detail with example.	13	K2	CO2
13. a) Explain Min Max algorithm in detail.	13	K2	CO3

OR

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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b) Compare alpha-beta pruning and alpha-beta algorithm in detail. 13 K2 CO3

14. a) Explain in detail about the unification with an algorithm in a first order logic. 13 K2 CO4

OR

b) Classify the approaches of knowledge representation. 13 K2 CO4

15. a) Illustrate any two applications of Expert system. 13 K2 CO5

OR

b) Explain about Bayesian theorem and Bayesian network with an example. 13 K2 CO5

PART - C (1 × 15 = 15 Marks)

16. a) Solve the following well-formed formula into clause form with sequence of steps 15 K3 CO4

$\forall x, [\text{Roman}(x) \wedge \text{know}(x, \text{Marcus})] \Rightarrow [\text{hate}(x, \text{Caesar}) \vee (\forall y, \exists z, \text{hate}(y, z) \Rightarrow \text{thinkCrazy}(x, y))]$.

OR

b) Solve the given problem. Describe the operators involved in it. 15 K3 CO1

Consider a water jug problem: you are given two jugs, a 4 gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug? Explicit Assumptions: A jug can be filled from the pump, water can be poured out of a jug onto the ground, water can be poured from one jug to another and that there are no other measuring devices available.