

SECTION A

1. Each Question carries 5 Marks

2. Instruction: Type the answer in space given

S. No.	Question	CO
Q 1	Explain Ridges, Plateau and Local Maxima with context to Steepest Hill Climbing.	CO1
Q 2	Explain Ignorable, Recoverable and Irrecoverable conditions with examples.	CO1
Q 3	Differentiate between Propositional and Predicate Logic.	CO2
Q 4	Discuss the role of reasoning in AI.	CO3
Q 5	Write a short note on reinforcement learning.	CO4
Q 6	Describe an expert system with example.	CO5

SECTION B

1. Each question carries 10 marks

2. Write answers in copies; click and upload all pages.

Q 7	Explain A* Algorithm using suitable example. <p style="text-align: center;">OR</p> Explain Best First Search Algorithm using suitable example.	CO1
Q 8	Consider the following sentences and translate these sentences into First order predicate logic: <ol style="list-style-type: none"> i. Marcus was a man. ii. Marcus was a Pompeian. iii. All Pompeians were Romans. iv. Caesar was a ruler. v. All Romans were either loyal to Caesar or hated him. <p style="text-align: center;">OR</p> Consider A, B, C and D to be propositional Symbols. Which of these formulae are Tautologies? Show by using truth table approach. <ol style="list-style-type: none"> i. $(A \leftrightarrow (B \wedge C))$ ii. $(A \leftrightarrow B) \wedge (C \rightarrow D)$ iii. $(A \rightarrow B) \rightarrow (A \rightarrow \sim B)$ iv. $(A \leftrightarrow B) \leftrightarrow [(A \rightarrow B) \wedge (B \rightarrow A)]$ v. $(\sim A \rightarrow B) \rightarrow (C \vee D)$ 	CO2
Q 9	Write short notes on (ANY TWO): <ol style="list-style-type: none"> a) Bayesian networks b) Fuzzy logic c) Bayes' Rule d) Non-monotonic and monotonic Reasoning e) Supervised and Unsupervised learning 	CO3
Q 10	Discuss various learning methods in neural networks with suitable examples. <p style="text-align: center;">OR</p> Elaborate biological analogies with suitable examples. Discuss the concept of neurons and perceptron with example.	CO4
Q 11	Describe the Architecture of Expert systems and its various components with suitable diagram.	CO5

Section C

1. Question carries 20 Marks.
2. Attempt any One Question out of three options.

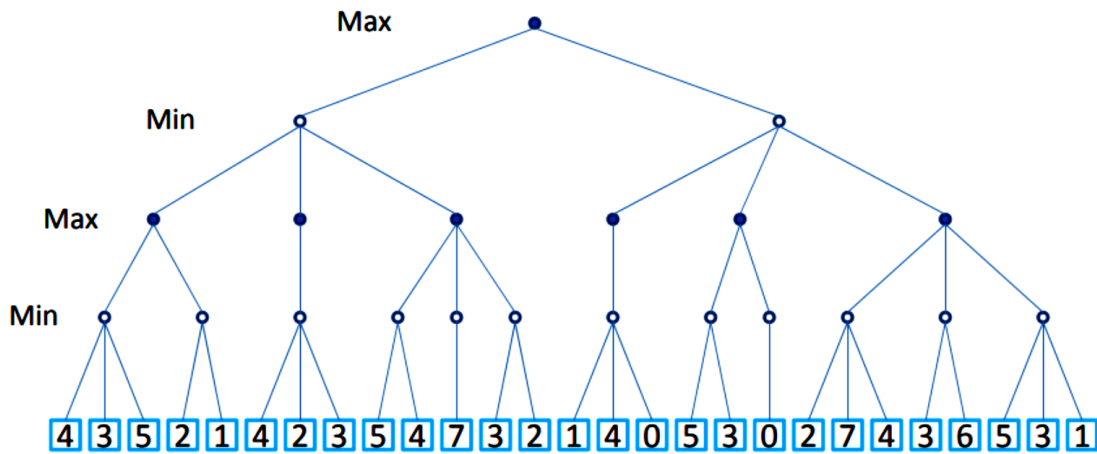
Q 12

Solve the following Crypt arithmetic Problem. Write Constraint equations and show the steps in finding solution.

$$\begin{array}{r}
 \text{TWO} \\
 + \text{TWO} \\
 \hline
 \text{FOUR} \\
 \hline
 \end{array}$$

OR

- i. Apply the Min-Max procedure and show the search trees.
- ii. Apply Alpha-Beta Pruning and calculate number of alpha cut-offs and Beta cut-offs.



CO1

OR

Solve the following problem using A* Algorithm.

The 8-Puzzle problem has 3x3 grid with randomly numbered (1 to 8) tiles arranged on it and an empty tile/space. At any point, the adjacent can move to the empty tile and can create a new empty tile. The Initiate state and Goal State are given. The purpose is to attain the goal state.

Initial State	Goal State
1	2
8	8
7	1
	4
	3
6	7
5	6
	5