



PRESIDENCY UNIVERSITY

BENGALURU

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Make Up Examinations – December 2025

Date: 26 – 12- 2025

Time: 9:30am – 12:30pm

School: SOCSE	Program: B.Tech CSE		
Course Code : CSE3005	Course Name : Applied Artificial Intelligence		
Semester: MK	Max Marks:100	Weightage: 50%	

CO - Levels	C01	C02	C03	C04
Marks	26	26	24	24

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x 2M=20M

1	Define informed and uninformed search	2 Marks	L1	C01
2	Differentiate between BFS and DFS	2 Marks	L2	C01
3	List 5 components of well define problem	2 Marks	L2	C01
4	Define proposition	2 Marks	L2	C02
5	Construct and prove De Morgan's law with truth table.	2 Marks	L1	C02
6	Explain terms: implication , inverse	2 Marks	L1	C02
7	Describe constraint satisfaction problem	2 Marks	L1	C03
8	Define prior probability	2 Marks	L2	C03
9	Explain joint probability	2 Marks	L2	C04
10	Define conditional probability	2 Marks	L2	C04

Part B

Answer the Questions

Total 80 Marks.

11.	a.	<p>Apply alpha beta pruning to the below tree and mention which branches are pruned.</p> <div style="text-align: center;"> </div>	20 Marks	L2	CO1
	b.	<p>Consider that we have a set of 2 empty water jugs which have capacity of 3 liters and 5 liters respectively, but no other markings on them. We need to fill out 4 liters using those jugs. Take this as a search problem, and define:</p> <ul style="list-style-type: none"> • The initial state and final state • The set of actions • The transition model <p>Consider a state to be represented as the tuple (x, y), where x is the amount of water filled in the 3 liter jug and y is the amount of water filled in the 5 liter jug. Initial state = $(0,0)$.</p>			

Or

12.	a.	<p>What is well defined problem? List 5 components of well-defined problem with an example.</p>			
	b.	<p>Find the most cost-effective path to reach from start state A to final state J using A* Algorithm.</p> <div style="text-align: center;"> </div>	20 Marks	L2	CO1

13.	a.	Explain properties of Well-formed formulae.	20 Marks	L2	CO2
	b.	<p>Translate below English sentence to propositional logic</p> <ul style="list-style-type: none"> • It is sunny this afternoon and it is not colder than yesterday • If we go swimming it is sunny • If we do not go swimming then we will make a Dallas trip • If we take a Dallas trip then we will be home by sunset. <p>We will be home by sunset.</p>			

Or

14.	a.	Construct and prove De Morgan's law with truth table.	20 Marks	L2	CO2
	b.	List common rules of inference and explain any 2 in detail.			

15.	a.	<p>What is backtracking and explain below ways of optimizing backtracking</p> <ul style="list-style-type: none"> • Degree heuristics • Minimum remaining value 	20 Marks	L3	CO3
	b.	Solve 4 queens problem using backtracking method.			

Or

16.	a.	<p>What is backtracking and explain below ways of optimizing backtracking</p> <ul style="list-style-type: none"> • Least constraining value heuristics • Forward checking 	20 Marks	L3	CO3
	b.	Solve 5 queens problem using backtracking method			

17.	a.	Any patient with a stiff neck (S) may or may not have meningitis (M). The probability of a patient having a stiff neck, if they have meningitis, is 0.8 . However, meningitis is not widespread in the population – having a probability of only 0.0001 . On the other hand, stiff necks are more common, with a probability of 0.1 . A patient goes to the doctor and reports that they have a stiff neck. What is the probability that it is because they have meningitis?	20 Marks	L3	CO4
	b.	<p>Consider below paragraph and produce the named entity tagging output.</p> <p>Citing high fuel prices, United Airlines said Friday it has increased fares by \$6 per round trip on flights to some cities also served by lower-cost carriers. American Airlines, a unit of AMR Corp., immediately matched the move, spokesman Tim Wagner said. United, a unit of UAL Corp., said the increase took effect Thursday and applies to most routes where it competes against discount carriers, such as Chicago to Dallas and Denver to San Francisco.</p>			

Or

18.	a.	Explain with an example part of speech tagging with 6 tags.	20 Marks	L3	CO3
	b.	Explain named entity tagging with an example.			