Duration: 3hrs **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt any FOUR	[20]
	a	Differentiate Between Forward and Backward chaining	
	b	Compare different search techniques based on their time complexities.	
	c	What is a histogram ? Can we perform univariate graphical analysis using histogram?	
	d	Explain various measures of the central tendencies of a statistical distribution.	
	e	State PEAS of automated taxi driver.	
	f	What are the different ways of knowledge representation?	
2	a	Can 1liter water be measured using 10 liter and 4 liter jug? Justify.	[10]
	b	Compare Linear Regression Vs Logistics Regression with suitable diagrams and formulas.	[10]
3	a	State A* algorithm and explain with example how A* searching algorithm helps in finding the goal with optimal path.	[10]
	b	With respect to Quantitative data analysis explain following: i. Measure of central tendencies ii. Measure of spread iii. Skewness and Kurtosis	[10]
4	a	1. Marcus was a man. 2. Marcus was a Pompeian. 3. All Pompeians were Romans. 4. Caesar was a ruler. 5. All Pompeians were either loyal to Caesar or hated him. 6. Every one is loyal to someone. 7. People only try to assassinate rulers they are not loyal to. 8. Marcus tried to assassinate Caesar. Was Marcus loyal to Casear ? Solve using resolution.	[10]
	b	In detail, explain steps in the Data Science Project.	[10]
5	a	What are the different types of Machine Learning algorithms? Give example of each category.	[10]
	b	Can min-max be used for team games? Draw sample trees for 2 and 3 teams.	[10]

6 a Consider you are performing ML for predicting housing prices you have trained three models and following data summarizes the predicted house price by each model for 5 different trial runs. [10]

Model Code	House Price Predicted (Lakh Rs)				
	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
A	3.5	3.4	3.8	3.5	3.4
B	3.9	3.8	3.7	3.9	3.6
C	3.5	3.3	3.6	3.5	3.8

Perform One way ANOVA F Test on this data and comment on whether the mean house price predicted by models A, B, C are same with level of significance 0.05. (Use of F Table is allowed)

b What are the rules of conversion from predicate to CNF? Explain each rule with proper example. [10]

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