

University of Mumbai
Examinations summer 2022

Time: 2 hour 30 minutes

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	_____ are the action making parts of an agent that takes in the input for the user.
Option A:	Actuators
Option B:	Sensors
Option C:	Environments
Option D:	Performance
2.	----- is optimal search algorithm in terms of heuristics
Option A:	Min Max Algorithm
Option B:	Depth Limited Search
Option C:	Hill Climbing Algorithm
Option D:	A* Algorithm
3.	P in PEAS stands for
Option A:	Performance Criteria
Option B:	Performance Evaluation
Option C:	Performance Measure
Option D:	Performance Environment
4.	----- is called as greedy local search
Option A:	Hill Climbing
Option B:	DFS
Option C:	BFS
Option D:	Uniform cost
5.	Backward Chaining and Forward Chaining in AI is
Option A:	Goal-driven and Data-driven approach respectively
Option B:	Bottom -Up and Top-down Approach respectively
Option C:	Goes from fact to result and goes from result to fact respectively.
Option D:	Uses "BFS" and "DFS" respectively
6.	Identify the one which is not a type of learning
Option A:	Reinforcement Learning
Option B:	Semi Unsupervised Learning
Option C:	Supervised Learning
Option D:	Unsupervised Learning
7.	Machine learning is a subset of which of the following.
Option A:	Artificial Intelligence
Option B:	Deep Learning
Option C:	Data Learning
Option D:	Statistics
8.	Which of the following is not a univariate graphical EDA technique?
Option A:	Histograms

Option B:	Box Plots
Option C:	Stem and Leaf plots
Option D:	Pair plots
9.	Which statistical tool should be used to test the equality of 3 or more population means?
Option A:	ANOVA
Option B:	T-test
Option C:	Chi-square test
Option D:	Interval Estimation
10.	Which is NOT the correct statement about the InterQuartile Range.
Option A:	The interquartile range tells you the spread of the middle half of your distribution.
Option B:	IQR = Q3 -Q1
Option C:	In boxplot upper whisker indicates Q3
Option D:	In boxplot IQR is indicated by the edges of the rectangle

Q2	10 marks each
A	Solve Resolution: 1. All people that are not poor and are smart are happy. 2. Those people that read are not stupid. 3. John can read and is wealthy. 4. Happy people have exiting lives. Can anyone be found with an exciting life?
B	What do you mean by EDA ? Explain different categorizations of EDA. For each type of EDA explain 1 technique that belongs to it in detail.

Q3	10 marks each
A	Elaborate in detail the steps in developing a Machine Learning application with architectural diagram.
B	1. Illustrate with diagram how Goal based agent works. 2. Describe PEAS and also write down the PEAS representations for Automated car driver

Q4	10 marks each																													
A	Compare min max and alpha Bea pruning algorithms.																													
B	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. <table><tr><th rowspan="2">Model Code</th><th colspan="5">House Price Predicted (Lakh Rs)</th></tr><tr><th>Trial 1</th><th>Trial 2</th><th>Trial 3</th><th>Trial 4</th><th>Trial 5</th></tr><tr><td>A</td><td>3.5</td><td>3.4</td><td>3.8</td><td>3.5</td><td>3.4</td></tr><tr><td>B</td><td>3.9</td><td>3.8</td><td>3.7</td><td>3.9</td><td>3.6</td></tr><tr><td>C</td><td>3.5</td><td>3.3</td><td>3.6</td><td>3.5</td><td>3.8</td></tr></table> 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)	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
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