

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	<p>Solve Resolution:</p> <ol style="list-style-type: none"> All people that are not poor and are smart are happy. Those people that read are not stupid. John can read and is wealthy. Happy people have exiting lives. <p>Can anyone be found with an exciting life?</p>
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	<ol style="list-style-type: none"> Illustrate with diagram how Goal based agent works. 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	<p>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.</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <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> </thead> <tbody> <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> </tbody> </table> <p>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)</p>	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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