RAN-2511000903011008-G

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B.C.A. (A.I. and Data Analytics) (Sem. - III) Examination December - 2025

303-05 : Fundamentals of Machine Learning (PR)

Time: 2 Hours] **[Total Marks: 25**

સૂચના : / Instructions

(1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book.

Seat No.:

Student's Signature

Q. 1. **Solve following problem:** **[10]**

Create a csv file called students.csv having following attributes :
(Student_ID, Age, Gender, Marks, City). Store fifteen records in the csv file and Perform Exploratory Data Analysis (EDA) using Python.

1. Load the dataset in dataframe.
2. Display the first 5 rows of the dataframe.
3. Perform Univariate Analysis on the Marks column (mean, median, mode, variance, standard deviation, histogram).
4. Perform Bivariate Analysis between Age and Marks using a scatter plot.
5. Perform Multivariate Analysis by showing correlation among all numerical attributes.

Q. 2. **Create a dataset having the following attributes:** **[10]**

- Phone_ID - Unique ID of the smartphone
- Storage - Internal storage capacity (in GB)
- RAM-Memory size (in GB)
- Price-Selling price of the phone (in thousands)

Use the following dictionary to create a DataFrame:

```
data = {
"Storage": [32, 32, 64, 64,128, 128, 128, 256, 256, 256, 512, 512, 512, 512, 512],
"RAM": [3, 4, 4, 6, 6, 8,12, 8,12, 16, 8, 12, 16, 18, 20],
"Price": [10, 12,15, 18, 22, 25, 30, 35, 38, 42, 50, 55, 60, 65, 70]
}
```

Solve following:

1) Load the dataset into a Pandas DataFrame and display the first 5 rows.
2) Define Storage as the independent variable (X) and Price as the dependent variable (Y).
3) Split the dataset into training and testing sets (80%-20%).
4) Apply Simple Linear Regression to predict phone prices using Storage.
5) Display the regression line on a scatter plot of Storage vs Price.
6) Evaluate the model performance using R^2 Score.

Q. 3. Viva-voce **[05]**
