



RAN-2511000903011008 - F

B.C.A. (Sem. - III) Examination December - 2025

303-05 : Fundamentals of Machine Learning (PR) (A.I. And Data Analytics)

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.:

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Student's Signature

Q. 1. Solve following problem: (10)

Create a CSV file named sales.csv with attributes:
(Invoice_ID, Customer_ID, Product, Quantity, Price, Total).
Store 20 records. Perform EDA :

1. Load dataset and show first 5 rows.
2. Univariate Analysis on Total.
3. Bivariate Analysis between Quantity and Price.
4. Multivariate correlation heatmap for numerical attributes.
5. Handle missing data if any.

Q. 2. A company wants to predict sales based on advertisement budget (in ₹ thousand). (10)

Dataset Dictionary:

```
data = {
  "Ad_Budget": [5,10,15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75],
  "Sales": [7, 12, 18, 22, 26, 30, 33, 36, 40, 44, 47, 50, 52, 55, 58]
}
```

Solve Following :

- 1) Define Ad_Budget as X and Sales as Y.
- 2) Train a Linear Regression model.
- 3) Predict sales for test data.
- 4) Show regression line with scatter plot.
- 5) Evaluate using R^2 Score and MSE.

Q. 3. Viva-voce (05)