

RAN-2411000802050001
M. Sc. (AI-ML) (Sem.-II) Examination April - 2026
205 - Machine Learning - I
Time: 3 Hours]
[Total Marks: 70

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
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Q. 1. Answer in Short (any Seven)
14

1. Define Machine Learning tools.
2. What is dataset splitting?
3. Define MSE and cost function.
4. What is the KNN algorithm?
5. Define hierarchical clustering.
6. What is gradient descent?
7. Define recall.
8. What is association rule learning?

Q. 2. Explain in Detail. (any two)
14

1. Explain regression techniques in detail.
2. Explain the data wrangling process and its importance.
3. Explain SVM and its working principle.

Q. 3. [A] Use Naive Bayes Classifier using the following data, classify whether the target email is spam or not.
07

Email	Contains "Offer"	Contains "Win"	Length	Spam
E1	Yes	Yes	Long	Yes
E2	Yes	No	Short	Yes
E3	No	Yes	Short	Yes
E4	No	No	Long	No
E5	No	No	Short	No

E6 (Offer=Yes, Win=No, Length=Long)

OR

Q. 3. [A] Explain in detail the FP-Growth algorithm. **07**

Q. 3. [B] From the given Advertise and sales data **07**

Adv. Cost (1000)	10	20	30	30	50
Sales (Units)	25	40	50	60	75

Fit a regression line and predict sales for 60,000 expenses.

Q. 4. **Answer the following Questions (any two)** **14**

1. Explain the KNN algorithm with its advantages and disadvantages.
2. Explain the Apriori algorithm with an example.
3. Explain model performance improvement techniques.

Q. 5. [A] Explain the confusion matrix and derive precision, recall, and accuracy. **08**

Q. 5. [B] **Answer in brief (any two)** **06**

1. What are overfitting and underfitting?
2. Define feature selection.
3. What is clustering?