



RAN-2411000802040001

M.Sc. (AI-ML) (Sem.-II) Examination April - 2026

204 : Python Programming II

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.: <table border="1" style="width: 100%;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> Student's Signature						

- Q.1. Write in Detail** **14**
- Demonstrate how to connect an SQLite database using Python by writing the necessary steps and explaining the use of the sqlite3 module.
 - A dataset contains inconsistent and missing data. Develop a data wrangling strategy using Pandas to clean, transform, and prepare the dataset for analysis.
- Q.2. Explain in Detail**
- Explain insert(), pop() and drop() of pandas. **07**
 - Evaluate the importance of DDL operations in database design and management using Python and SQLite. **07**
- OR**
- Critically evaluate the use of pivot_table() versus groupby() for aggregation tasks. Highlight similarities and differences with examples. **07**
- Q.3. Explain in Detail (Any two)** **14**
- Compare and evaluate the effectiveness of line plots vs bar charts for representing time series data. Illustrate with suitable examples.
 - Explain the various plot attributes in Matplotlib that control the appearance, readability and interpretation of a graph. Illustrate with suitable examples.
 - Design a complete data analysis pipeline where data is stored in an SQLite database processed using Pandas, and visualized using Matplotlib. Explain each step with suitable examples.
- Q.4. Justify Following Answers (Any two)** **14**
- Compare and evaluate the three layout managers. Discuss their advantages, limitations and suitable use cases. ‘
 - Develop a cascading Combobox system (e.g., Country → State → City) where the selection of one Combobox dynamically updates the options in another
 - Define the Menu widget in Tkinter. Explain how it is used to create menu bars and drop down lists in a GUI application, and describe the role of command binding in handling user interactions.

Q.5. Explain in Detail

- a. Design a simple TensorFlow workflow that creates tensors, performs operations and displays the results. **07**

OR

- a. Explain how TensorFlow handles tensor data types and operations internally Discuss the importance of data type consistency. **07**
- b. Design and implement Python application that perform following **07**
Dataset : Transport_Fuel_Analysis (Vehicle_ID, Vehicle_Type, Fuel_Consumed
Distance_Covered, Fuel_Price, Total_Cost)
1. Load dataset
 2. Calculate fuel efficiency (Distance/Fuel)
 3. Identify most efficient vehicle
 4. Add efficiency column
 5. Plot bar chart of fuel consumption
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