

PUSASQF405
APPLICATIONS OF IT - BASICS OF PYTHON

Time: 2 hours
Total Marks: 60

Note:

1. The candidate has the option to either question 3A or question 3B. Rest all questions are mandatory.
2. Numbers to the right indicate full marks.
3. The candidates will be provided with the formula sheet and graphs (if required) for the examination.
4. Use of approved scientific calculator is allowed.

Q1. Attempt All questions.

A. Write a python program to find the area of a circle given its radius using function. **5 Marks**

B. Write a program in python to calculate the interest earned by a customer. from the bank after depositing a principal amount for 5 years. Take input. from the customer for principal amount and the interest provided by the the bank was at 8.75%.
(Formula: $\text{principal_amount} \times \text{intrest_rate} \times \text{years}$) **5 Marks**

C. Create a dataframe 2 dataframes, one for students and another for academic details. Store them in df1 and df2. Split the data based on condition. Result and merge the data based on name and on students whose result was P in data post-split. **5 Marks**

student_details:

```
data = {
    "Name": ["Alice", "Bob", "Charlie", "David"],
    "Age": [30, 40, 25, 50],
    "Gender": ["F", "M", "M", "M"],
    "City": ["New York", "Los Angeles", "Chicago", "Houston"]
}
```

academic_details:

```
data = {
    "Name": ["Alice", "Charlie", "David", "Bob", "Alice", "David"],
    "Marks": [75, 80, 55, 78, 40, 67],
    "TransactionType": ["P", "P", "P", "P", "F", "P"]
}
```

Q2. Attempt All questions.

- A.** Write a python function to find the minimum and the maximum values from a list of numbers **5 Marks**

Numbers = [4,8,9,1,3]

- B.** Write a program to print list containing the running division of the below list

input_list = [1,2,3,4,5,6,7,8,9]

Hint: Running multiplication = current_item*previous_multiplication

5 Marks

- C.** A company Z is well known for manufacturing balcony blinds. Create a python function such that the price of the balcony blind is Rs. 500 per square feet and do the following: **5 Marks**

- i. Ask user to input the area of the blind. **(2.5)**
ii. Create a function such that the input is passed to calculate the final bill amount which includes 10% of manufacturing cost of the total bill amount, 9% CGST and 9% SGST of the total bill amount. Provide the final bill charges. **(2.5)**

manufacturing_amount = 0.1 * bill_amount

cgst = 0.09 * bill_amount

sgst = 0.09 * bill_amount

total_bill = bill_amount + manufacturing_amt + cgst + sgst

Q3. Attempt question 3A or question 3B.

A. Load the winequality-red.csv dataset in python. Predict the quality of wine using Linear Regression **30 Marks**

- a. Read the winequality-red dataset and split the data in X and Y such that X consists of all the data except for the quality column and Y contains only quality column. (6)
- b. Perform train test split with test size 35% (6)
- c. Perform Linear Regression (6)
- d. Predict the values from test dataset. (6)
- e. Provide the value for RMSE. (6)

OR

B. Load the built-in iris dataset. Build a model to predict the species of the plant based on their corresponding features. Predict using Logistic Regression. **30 Marks**

- a. Read the dataset. (2)
- b. Split X.data in X and Y.target in Y (5)
- c. Perform train test split with test size 20% (7)
- d. Run the logistic regression model. (6)
- e. Predict the values for test dataset. (5)
- f. Find the accuracy of the model. (5)