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Dr. D. Y. Patil Institute of Management & Entrepreneur Development
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Total No. of Questions : 5]

SEAT No. :

PF-5721

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M.B.A.

BA 602 MJ : PYTHON

(2024 Pattern) (Semester - III)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate marks for questions/sub questions.*
3) *Answer to the questions should be specific and to the point.*
4) *Draw sketches wherever necessary with the pencils.*
5) *Graph paper will not be provided.*

Q1) **Solve the following (Any five) :** **[10]**

a) Define a variable in Python.
b) What are Python lists?
c) State the purpose of the input() function.
d) List any two arithmetic operators in Python.
e) What is a function in Python?
f) Illustrate any two techniques used to retrieve help information in Python.
g) Explain how comments are written in Python code, using a suitable example.
h) What are NumPy arrays?

Q2) **Answer the following (Any two) :** **[10]**

a) You are appointed as an HR analyst and assigned to study the impact of employee training programs. Identify the types of data you would collect for this analysis and justify your choice of appropriate Python data types to store them. Explain your reasoning and demonstrate your selections using suitable Python code snippets.
b) Write a Python program that accepts ten numbers from the user using a loop. Use conditional statements to count how many of the entered numbers are even and how many are odd, and display the final counts.
c) Create a Python snippet that combines concatenation, membership testing, and counting operations to process employee skill data stored in tuples. Explain how each tuple operation contributed to solving the problem.

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Q3) **Answer the following (Any one) :** **[10]**

a) i) Explain what a dictionary is in Python and discuss its key features.

ii) Create a Python dictionary named employee with the following key–value pairs :

name : "Amit". age: 20, department: "HR", salary :

45000

iii) Write the code to display all the elements of the dictionary.

iv) Update the value of the key age to 21 to reflect the revised employee record.

v) Write the code to verify whether the value has been updated successfully and display the updated dictionary.

b) i) Define what a list is in Python and describe its key features.

ii) Write the code to create the following list :

list_no = [9, 8, 7, 6, 5, 4, 3].

iii) Insert the element 100 at the beginning of the list.

iv) Insert the element 222 at the end of the list

v) Delete the element at index position 5

vi) Print all elements in reverse order.

Q4) **Answer the following (Any One) :** **[10]**

a) Analyze the role of Python in business analytics and explain how it enables organizations to extract insights from data for effective decision-making.

b) Define what a user-defined function is Using Python, write the functions addnum, subnum, and prodnum, and develop a program that accepts two numbers from the user and displays the results of addition, subtraction, and multiplication by calling these user-defined functions.

Q5) **Answer the following (Any One) :** **[10]**

a) A company has monthly sales data in CSV format with columns: Month, Product, Sales. The marketing team wants to visualize trends :

- Line plot for monthly sales of each product
- Bar plot comparing total sales across products

i) Write Python code using Matplotlib to generate the visualizations.

ii) Explain how visualization helps identify trends and anomalies.

iii) Suggest one additional plot that could help in strategic decision-making and justify your choice.

b) A CSV file student_marks.csv has these columns :

Student ID, Name, Subject, Marks

i) Write a Python program using Pandas to read the CSV file student_marks.csv.

ii) Calculate the average marks for each subject using Pandas and display the results.

iii) Find the top 3 students in each subject using Pandas.

iv) Explain how grouping in Pandas helps to calculate subject-wise averages easily.

v) Explain how sorting in Pandas helps to identify top students faster than using normal Python loops.



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