24MCU416

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Fourth Semester)

Branch – **MATHEMATICS WITH COMPUTER APPLICATIONS**

DATA ANALYTICS WITH PYTHON

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Find the correct operator used for exponentiation in Python a) ^ b) ** c) // d) %	K1	CO1
	2	Illustrate the difference between = and == in Python. a) = is for comparison, == is for assignment b) = is for assignment, == is for comparison c) Both are the same d) == is used only for strings	K2	CO2
2	3	Find the incorrect statement regarding loops. a) A for loop can be replaced by a while loop b) The break statement can be used to terminate a loop c) A while loop executes at least once d) A loop can be nested inside another loop	K1	CO1
	4	Why exception handling is necessary in programming. a) To handle unexpected errors b) To reduce memory consumption c) To optimize execution errors d) To improve variable naming	K2	CO2
3	5	The correct method to add an element to a list in Python is a) add() b) append() c) insert() d) extend()	K1	CO1
	6	The correct way to import a user-defined module in Python is a) include mymodule b) use mymodule c) import mymodule d) call mymodule	K2	CO2
4	7	Name the method used in Pandas to check for missing values in a DataFrame. a) isna() b) dropna() c) fillna() d) checkna()	K1	CO1
	8	Compare NumPy arrays and Pandas DataFrames. a) Both store tabular data b) NumPy arrays are mutable; DataFrames are immutable c) NumPy supports numbers; DataFrames support mixed types d) Both handle missing values	K2	CO2
5	9	Select plot type used to visualize probability distributions in Matplotlib. a) Violin Plot b) Pie Chart c) Area Plot d) Quiver Plot	K1	CO1
	10	Why SQL Alchemy is preferred over direct SQL queries. a) It is slower but more readable b) It an object-oriented interface for databases c) It only supports MySQL d) It replaces SQL completely	K2	CO2

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Apply Python operators to develop a program that takes two numbers as input and performs all arithmetic operations on them.	K3	CO3
		(OR)		
	11.b.	Construct a Python script that accepts user input for temperature in Celsius and converts it to Fahrenheit and Kelvin.		
2	12.a.	Utilize the concept of classes and objects to create a student management system with attributes.	K3	CO3
		(OR)		
	12.b.	Identify the differences between normal function calls and recursive function calls with an example program.		
3	13.a.	Survey the common real-world applications where dictionaries are preferred over lists.	K4	CO4
		(OR)		
	13.b.	Examine how exception handling can be integrated into functions that work with lists and dictionaries.		
4	14.a.	Explain different techniques in Pandas to handle missing values in a DataFrame.	K4	CO4
		(OR)		
	14.b.	Dissect the process of importing data from multiple file formats (CSV, Excel, JSON) in Pandas.		
5	15.a.	Evaluate the effectiveness of Matplotlib plots for time-series data visualization.	K5	CO5
		(OR)		
	15.b.	Write the significance of contour plots in visualizing multi-dimensional data.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Analyze the differences between mutable and immutable data types in Python with examples.	K4	CO4
2	17	Distinguish between syntax errors, logical errors, and runtime errors with proper examples.	K4	CO5
3	18	Rate the efficiency of using built-in versus user-defined modules for data processing in Python.	K5	CO5
4	19	Evaluate why NumPy arrays are preferred over Python lists in scientific computing.	K5	CO5
5	20	Develop a Python application that integrates SQL Alchemy for efficient database handling.	K6	CO6

Z-Z-Z END