

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch - INFORMATION TECHNOLOGY

DATA ANALYSIS AND VISUALIZATION USING 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	Which of the following is a valid data type in Python? (a) String (b) Tuple (c) List (d) All of these	K1	CO1
	2	What does the pass statement do in Python? (a) Ends a function (b) Skips the execution (c) Comments code (d) None	K2	CO1
2	3	Which keyword is used to create a function in Python? (a) func (b) define (c) def (d) lambda	K1	CO1
	4	What is the result of 5 // 2 in Python? (a) 2.5 (b) 2 (c) 3 (d) Error	K2	CO1
3	5	Which method is used to remove all elements from a dictionary? (a) del() (b) clear() (c) pop() (d) empty()	K1	CO2
	6	ZIP lists are used to: (a) Create tuples (b) Merge lists (c) Remove duplicates (d) Sort dictionaries	K2	CO2
4	7	Pandas series can be created from: (a) Lists (b) Dictionaries (c) Numpy Arrays (d) All of the above	K1	CO3
	8	Which of the following method is used to transpose data frames in Pandas? (a) T() (b) transpose() (c) shift() (d) reverse()	K2	CO4
5	9	Which library is used for data visualization? (a) Numpy (b) Pandas (c) Matplotlib (d) Scipy	K1	CO5
	10	Which plot would you use to show data distribution? (a) Bar plot (b) Line plot (c) Histogram (d) Scatter plot	K2	CO5

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	Explain Python's data types and give examples.	K2	CO1
	OR			
	11.b	Describe Python's control flow statements like if, else, and elif.		

Cont...

2	12.a	Write a Python program to demonstrate the use of functions.	K3	CO1
	OR			
	12.b	Explain the role of functions in Python with an example of recursion.		
3	13.a	How do you create and manipulate dictionaries in Python? Provide examples.	K3	CO2
	OR			
	13.b	Explain file operations such as reading and writing in Python.		
4	14.a	What are data frames? Write a Python code to create one.	K4	CO4
	OR			
	14.b	Describe the process of transposing a data frame. Give an example.		
5	15.a	Create a line plot using matplotlib to visualize sample data.	K6	CO5
	OR			
	15.b	How would you visualize categorical data using a bar plot in Python?		

SECTION -C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

Module	Q. No	Question	K Level	CO
1	16	a.Explain the significance of Python's control flow statements with suitable examples. b. Discuss how functions and modularity improve the software development process.	K3	CO1
2	17	Compare lists, tuples, and dictionaries. Analyze scenarios where each data structure is the best choice.	K4	CO2
3	18	a.What are the different file modes available in Python for reading and writing files? b. Write a Python program to log error messages into a text file.	K4	CO3
4	19	Describe the process of handling missing data in a data frame. How would you decide whether to fill or drop missing values?	K5	CO4
5	20	a. What are the key differences between a bar plot and a pie chart? b. Discuss the best practices for choosing the right visualization type for categorical data.	K6	CO5

Z-Z-Z

END