PVP 23

Code: 23CS6401

II B.Tech - II Semester – Honors Examinations - MAY 2025

ADVANCED PYTHON PROGRAMMING

(HONORS in COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO
1. a)	What is the output of this lambda function: (lambda x: x + 5)(10)?	L1	CO1
b)	Which regular expression method is used to find all matches of a pattern in a string?	L1	CO1
c)	What is the default data type of elements in a NumPy array created using np.array([1, 2, 3])?	L1	CO1
d)	Illustrate the difference between np.max() and np.argmax()?	L2	CO1
e)	Name one method used to get descriptive statistics of a DataFrame.	L1	CO1
f)	Which Pandas method is used to reshape data based on column values?	L1	CO1
g)	Which Python module is commonly used for creating and managing threads?	L1	CO1
h)	Which TensorFlow function is used to create a constant tensor?	L1	CO1
i)	What is the purpose of the Dense layer in a Keras model?	L1	CO1
j)	What does activation='relu' mean in a Keras layer?	L1	CO1

PART – B

			BL	CO	Max. Marks
UNIT-I					
2	a)	Build a Python program using list comprehension to create a list of squares of all even numbers from 1 to 20. Explain how list comprehension works.	L3	CO2	5 M
	b)	Explain how JSON data is handled in Python using the json module. Show how to read from and write to a JSON file.	L3	CO2	5 M
OR					
3	a)	Explain the different types of control flow statements in Python with examples: if-else, for and while loops. How is loop control achieved using break and continue?	L2	CO2	5 M
	b)	Develop a Python program that uses at least three different regular expression methods (like search(), findall() and sub()) to extract, match and replace text in a given string. Explain the output of each method used.	L3	CO2	5 M
UNIT-II					
4	a)	Analyse NumPy data types. How can you check or change the data type of a NumPy array? Give suitable examples.	L3	CO3	5 M
	b)	Develop a Python program to reshape a 1 D array to 2 D array and perform element wise square root using np.sqrt.	L3	CO3	5 M
OR					

5	a)	Explain the concept of broadcasting in NumPy. Provide two examples where broadcasting simplifies operations between arrays of different shapes.	L2	CO3	5 M
	b)	Discover how NumPy support mathematical operations on arrays? Explain with examples of element-wise operations and broadcasting.	L3	CO3	5 M
UNIT-III					
6	a)	Discuss the process of reshaping data using pivot(), pivot_table() and melt() in Pandas. Give examples of when each is appropriate.	L2	CO3	5 M
	b)	Illustrate data filtering in Pandas. Write a program to filter rows based on multiple conditions.	L3	CO3	5 M
OR					
7	a)	Explain the use of describe(), mean(), sum() and value_counts() functions in summarizing data. Provide suitable examples.	L2	CO3	5 M
	b)	Explain the concept of hierarchical indexing in Pandas. How can it be created and used to access multi-level data?	L2	CO3	5 M
UNIT-IV					
8	a)	Compare TCP and UDP protocols in the context of Python network programming. Provide Python code examples.	L4	CO4	5 M

	b)	Explain the basic structure of a Python socket program for creating a client-server connection. Include both server-side and client-side code snippets.	L2	CO4	5 M
OR					
9	a)	Explain the difference between threads and processes in Python. In what scenarios would you prefer one over the other? Give examples.	L2	CO4	5 M
	b)	Describe the steps involved in creating a simple multithreaded server in Python. Why is multithreading useful in server-side programming?	L2	CO4	5 M
UNIT-V					
10	a)	Explain the process of compiling and training a Keras model. What are the key parameters used in the compile() and fit() methods?	L3	CO5	5 M
	b)	Describe the role of TensorFlow in building deep learning applications. How does it differ from other machine learning libraries?	L3	CO5	5 M
OR					
11	a)	Develop a python program using Keras to load, train, normalize a data set and split the data set into training sets.	L3	CO5	5 M
	b)	Explain how tensors are created and manipulated in TensorFlow. Illustrate with examples of different tensor types and operations.	L2	CO5	5 M