

**Third Semester B.E./B.Tech. Degree Supplementary Examination,  
June/July 2024**

**Python Programming for Data Science**

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. M : Marks , L: Bloom's level , C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	Define token. List and define any 3 types of tokens.	04	L1	CO1
	b.	Evaluate the following expressions: (i) $12 + 34 - 320 + 23 ** 2$ (ii) $20 >> 2$ (iii) $3 \wedge 3 \wedge 3$ (iv) $\sim 14$ (v) $id(5) == id(5)$ (vi) $12$ and not $(20 > 15)$ or $(10 > 5)$	06	L2	CO1
	c.	Develop a program to find simple interest and compound interest given principal amount, rate and time.	10	L3	CO1
<b>OR</b>					
Q.2	a.	Define variable. List the rules for naming a variable.	04	L1	CO1
	b.	i) Express python statement to assign a complex number with real value 5 and imaginary value 9 to variable named 'c1'. Predict the output or reason for error if any. ii) <code>word = 'test'</code> <code>word[0] = 'b'</code> <code>print(word)</code> iii) <code>i = input("Enter a number")</code> <code>j = i + 10</code> <code>print(j)</code>	06	L2	CO1
	c.	Develop a program to find area and circumference of circle.	10	L3	CO1
<b>Module – 2</b>					
Q.3	a.	Explain inline if with an example.	04	L1	CO2
	b.	Figure out errors in the following code: <code>x = int("Enter value of x : ")</code> <code>for in range[0, 10]</code> <code>if x = y</code> <code>print("They are equal")</code> <code>else:</code> <code>print("They are unequal")</code>	06	L2	CO2
	c.	Develop a program to sort four numbers using minimum no. of ifs.	10	L3	CO2

## OR

Q.4	a.	State the purpose of break, continue and else keyword when used with looping structure.	04	L1	CO2
	b.	Predict output of following code: i) for x in range(12, 4, -2): print(x) ii) i = 0 while i < 3 : print(i) i = i + 1 else : print(7) iii) for i in range(5) if i == 2 : break print(i)	06	L2	CO2
	c.	Develop a python program for checking if a given n digit number is palindrome or not using    and % operator	10	L3	CO2

## Module – 3

Q.5	a.	Define list and state its properties.	04	L1	CO3
	b.	Predict output of following code: lst1 = [12, 7, 11, 45, 13, 23, 33, 67, 89, 39, 30, 42, 52, 49] lst2 = [3, 5, 9] i) print(lst2 * 3) ii) print(lst1 + lst2) iii) print(lst1 [::-2]) iv) print(lst1 [4 : 12]) v) print(lst1 [ : -2]) vi) print(89 in lst1)	06	L2	CO3
	c.	Develop a python script to rotate right about a given position in that list and display them. [Hint : input: [4, 9, 8, 3], Position = 2 Output: [8, 3, 4, 9]	10	L3	CO3

## OR

Q.6	a.	Define tuple and state its properties.	04	L1	CO3
	b.	i) Express a python statement to define a tuple t1 with single value 34. ii) Express a python statement to change “wed” to “tue” in following dictionary. days = {1 : “Sun”, 2 : “Mon”, 3 : “Wed”} iii) Predict output of the following code: d = { ‘x’ : 1, ‘y’ = 2, ‘z’ = 3} a = d.pop(‘y’) print(a) print(d)	06	L2	CO3
	c.	Using dictionary, develop a python program to determine and print the number of duplicate words in a sentence.	10	L3	CO3

## Module – 4

Q.7	a.	Explain broadcasting and state the rules of broadcasting.	04	L1	CO4
	b.	Predict output of following code: (i) <code>a1 = np.array([[1, 2, 3], [4, 5, 6]])</code> <code>a2 = np.array([[7, 8, 9], [10, 11, 12]])</code> <code>v = np.hstack((a1, a2))</code> <code>print(v)</code> (ii) <code>a1 = np.arange(10, 19).reshape(3, 3)</code> <code>b1 = a1[0:2, 0:2]</code> <code>print(b1)</code> (iii) <code>a1 = np.arange(10, 20).reshape(2, 5)</code> for K in a1: <code>print(K)</code>	06	L2	CO4
	c.	Develop python code to find and display column mean, maximum, minimum, standard deviation of following numpy array: <code>a1 = np.array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11])</code> <code>. reshape(4, 3)</code>	10	L3	CO4

## OR

Q.8	a.	List and explain two data structure of Pandas library.	04	L1	CO4
	b.	Predict output of following code : (i) <code>import pandas as pd</code> <code>s1 = pd.series([2, 5, 6, 7, 9, 12, 32, 15, 14, 24, 34])</code> <code>s2 = s1.reindex([0, 4, 6, 7])</code> <code>print(s2)</code> (ii) <code>s1 = pd.series([2, 5, 6, 7], ['a', 'b', 'c', 'd'])</code> <code>s2 = pd.series([1, 2, 3, 4], ['c', 'd', 'e', 'f'])</code> <code>print(s1 + s2)</code>	06	L2	CO4
	c.	Illustrate usage of <code>apply()</code> function on dataframe with example.	10	L3	CO4

## Module – 5

Q.9	a.	Define pickling in python. Name the library and functions used for pickling in python.	04	L1	CO5
	b.	Explain string manipulation function <code>split</code> and <code>join</code> with an example.	06	L2	CO5
	c.	Illustrate binning or discretization with an example.	10	L2	CO5

## OR

Q.10	a.	List different ways and functions used to join dataframes in python.	04	L1	CO5
	b.	Explain the three phases of data manipulation.	06	L2	CO5
	c.	Illustrate permutation of dataframes with an example.	10	L3	CO6

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