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Code No. : 11625 N

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (I.T.) I-Semester Main Examinations, Jan./Feb.-2024**Python Programming**Time: **3 hours**Max. Marks: **60***Note: Answer all questions from Part-A and any FIVE from Part-B***Part-A (10 × 2 = 20 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	Define Type casting and Type Coercion in Python with example.	2	1	1	1
2.	Write a function called is_leap () that accepts one parameter i.e. year. The function should check whether the year is a leap year or not	2	3	1	1,2
3.	Analyze the following code segment and find the output <pre>colors = ["violet", "indigo", "blue", "green", "yellow", "orange", "red"] del colors[4] colors.remove("blue") colors.pop(3) print(colors)</pre>	2	3	2	1,2
4.	Illustrate reshaping() a ndarray with example.	2	2	2	1
5.	Write a python program that has a function named lenwords (STRING), that takes a string as an argument and returns a tuple containing length of each word of a string. Example: If the string is "python is fun", the tuple will have (6,2,3)	2	3	3	1,2
6.	List one similarity and one difference between list and dictionary.	2	1	3	1
7.	Describe the different types of constructors with syntax and example	2	1	4	1
8.	Write a Python class, Cylinder, and define two methods that return the Cylinder area and volume.	2	3	4	1,2
9.	Discuss user defined exceptions with example.	2	1	5	1
10.	Differentiate pickling and unpickling in python	2	2	5	1
Part-B (5 × 8 = 40 Marks)					
11. a)	Illustrate the different types of control flow statements available in Python with flowcharts	4	1	1	1
b)	Define recursion. Write a program to create a recursive function addition(num) to calculate the sum of numbers from 0 to 10.	4	2	1	1,2
12. a)	What is Numpy? Given a square matrix M, write a function DiagCalc which calculate the sum of left and right diagonals and print it respectively. Input: A matrix M [[1,2,3], [3,4,5], [6,7,8]] Output: 13 13 Explanation: Sum of left diagonal is 1+4+8=13 Sum of right diagonal is 3+4+6=13	4	3	2	1,2
b)	Explain the following list methods with syntax and example. a) extend() b) insert() c) index() d)reverse()	4	2	2	1

13. a)	Explain the concept of indexing in tuples. Write a python program to find the second largest element in a tuple	4	1	3	1,2								
b)	Define a dictionary. Given two dictionaries d1 and d2, write a python program using function MergeDic that accepts two dictionaries d1 and d2 and return a new dictionary by merging d1 and d2. Note: Contents of d1 should be appear before contents of d2 in the new dictionary and in same order. In case of duplicate value retain the value present in d1. Input: {1: 1, 2: 2} {3: 3, 4: 4} Output: {1: 1, 2: 2, 3: 3, 4: 4}	4	3	3	1,2								
14. a)	What are different types of inheritance supported by Python? Explain	4	2	4	1								
b)	Define instance variables. Write a Python program to create a function named move_rectangle() that takes an object of Rectangle class and two numbers named dx and dy. It should change the location of the Rectangle by adding dx to the x coordinate of corner and adding dy to the y coordinate of corner. Print the new coordinates.	4	3	4	1,2								
15. a)	Define files and its types. Explain the following file built-in functions and method with clear syntax and example: a) read() b) write() c) seek() d) tell()	4	2	5	1								
b)	What happens if except clause is written without any Exception type? Design a python program which will throw exception if the value entered by user is less than zero	4	3	5	1								
16. a)	Explain Bitwise and logical operators. Write a program to calculate income tax for the given income by adhering to the rules below	4	3	1	1,2								
<table border="1"> <thead> <tr> <th>Taxable Income (Rupees)</th> <th>Rate (in %)</th> </tr> </thead> <tbody> <tr> <td>First 10,000</td> <td>0</td> </tr> <tr> <td>Next 10,000</td> <td>10</td> </tr> <tr> <td>The remaining</td> <td>20</td> </tr> </tbody> </table>						Taxable Income (Rupees)	Rate (in %)	First 10,000	0	Next 10,000	10	The remaining	20
Taxable Income (Rupees)	Rate (in %)												
First 10,000	0												
Next 10,000	10												
The remaining	20												
Print both Given Income and Income Tax to be paid.													
b)	Describe string formatting in python. Write a program that accepts a sentence and calculates the number of words, digits, uppercase letters and lowercase letters.	4	2	2	1,2								
17.	Answer any <i>two</i> of the following:												
a)	Define Sets. Illustrate the following set methods with syntax and example a) add() b) symmetric_difference_update() c) union() d) discard()	4	2	3	1								
b)	Define operator overloading. Write Python Program to overload the '+' operator so that it can add two objects of class Fraction.	4	3	4	1,2								
c)	Explain different methods defined in the calendar module. Write a python program to find the age of a person given his date of birth.	4	3	5	1,2								

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	35%
iii)	Blooms Taxonomy Level – 3 & 4	45%