

**BHOPAL**

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TERM END EXAMINATIONS (TEE) – January 2024

name	: B.Tech	Semester	: Fall Inter II 2023-24
Title/ Code	: Introduction to Problem Solving and Programming/ CSE1021	Slot	: B11+B12+B13+B14+B15
	: 3 Hrs.	Max. Marks	: 100

Question Description**PART A – (60 Marks)**

- (a) List out some differences between an algorithm and pseudocode. Write some applications of python programming language.

OR

- (b) What is the concept of an algorithm, and what purpose does it serve? Explore the significance of algorithms and also key characteristics that define a well-designed algorithm.
- (a) Explain the Identifiers, Keywords, Statements, Expressions, and literals in Python programming language with examples.

OR

- (b) Explain the necessity of function. How to define a function in python. Explain recursion with an example. Discuss the importance of modules in python.
- (a) Write a Python program to check the validity of a password given by the user.
The Password should satisfy the following criteria:

1. Contain at least 1 letter between a and z
2. Contain at least 1 number between 0 and 9
3. Contain at least 1 letter between A and Z
4. Contain at least 1 character from \$, #, @
5. Minimum length of password: 6
6. Maximum length of password: 12

If all of these condition satisfied, return "Valid password" or else "Invalid password".

OR

- (b) What is the use of Pseudo-random numbers generator in python? Explain various predefined methods of Pseudo-random numbers generator.

- c) Write Pythonic code to find the factorial of a number. 4
- a) Write Python program to find the GCD of two positive numbers. 6
- b) Write Python program to compute Prime Factors of a given number. 6

OR

- c) Discuss the various random data generation techniques. Write a program for Random Lottery Pick. Generate 100 random distinct lottery tickets and pick one lucky ticket from it as a winner. 12
- a) Explain the different way to declare the list data structure in python. Also explain the following list methods with an example. a) append () b) ~~pop()~~ c) insert() d) index() e) sort() 12

OR

- b) Explain the difference between list, tuple and dictionary with an example. 12

PART B – (40 Marks)

Write a Python program using function in which pass a list as an argument and function should return even numbers from the given list. 8

Write a python program to convert given binary number 1111010 into decimal, octal, and hexadecimal. 8

Explain the need for **continue** and **break** statements. Write a program to check whether a number is prime or not. Prompt the user for input. 8

Write a program to display the Fibonacci sequences up to nth term where n is provided by the users. 8

Define array in python. Write Python code to count the total no of duplicate elements in array, remove the duplicate elements from the array, return the number which has maximum duplicate elements. 8