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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY ,GREATER NOIDA**(An Autonomous Institute Affiliated to AKTU, Lucknow)****BACHELOR OF TECHNOLOGY (B.Tech)****(SEM: 01 Theory Examination (2020-2021))****Subject Name: PROBLEM SOLVING USING PYTHON****Time: 3Hours****Max. Marks:100****General Instructions:**

- All questions are compulsory. Answers should be brief and to the point.
- This Question paper consists of 02 pages & 08 questions.
- It comprises of three Sections, A, B, and C. You are to attempt all the sections.
- **Section A** - Question No- 1 is very short answer type questions carrying 1 mark each, Question No- 2 is short answer type carrying 2 mark each. You are expected to answer them as directed.
- **Section B** - Question No-3 is Long answer type -I questions with external choice carrying 6 marks each. You need to attempt any five out of seven questions given.
- **Section C** - Question No. 4-8 are Long answer type -II (within unit choice) questions carrying 10marks each. You need to attempt any one part a or b.
- Students are instructed to cross the blank sheets before handing over the answer sheet to the invigilator.
- No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION – A

- | | | |
|--|------------------|------------|
| 1. Answer <u>all</u> the parts- | [10×1=10] | CO |
| a. In Python what is slicing? | (1) | CO1 |
| b. Write name of any two Python Editors(IDE)? | (1) | CO1 |
| c. What is the output when we execute list (“hello”)? | (1) | CO4 |
| d. Name the Mutable built-in type does python provides? | (1) | CO4 |
| e. What is <u>__init__</u> ? | (1) | CO3 |
| f. What is negative index in Python? | (1) | CO2 |
| g. Define recursion? | (1) | CO3 |
| h. How is Python an interpreted language? | (1) | CO1 |
| i. What does [::-1] do? | (1) | CO1 |
| j. What are different file opening modes? | (1) | CO5 |
| 2. Answer <u>all</u> the parts- | [5×2=10] | CO |
| a. Define floor division with example? | (2) | CO1 |
| b. Differentiate between global and non-local variables? | (2) | CO3 |
| c. Explain Regular expressions? | (2) | CO4 |
| d. Define the Programming Cycle for Python? | (2) | CO1 |
| e. Explain lambda function? | (2) | CO3 |

SECTION – B

- | | | |
|--|-----------------|------------|
| 3. Answer any <u>five</u> of the following- | [5×6=30] | CO |
| a. Write Python code to find the factorial of a number. | (6) | CO2 |
| b. Write Python program to convert uppercase letter to lowercase and vice-versa. | (6) | CO2 |
| c. Discuss format specifiers and escape sequences with examples. | (6) | CO1 |

- d. Write a module in Python to implement arithmetic calculator that has following user-defined functions: add(), sub(), mul(), div(). Write a python program to import this module and perform any operation. (6) CO3
- e. Discuss File handling in python. How to perform open, read, write, and close operations into a text file. Discus CSV files. (6) CO5
- f. Discuss the relation between tuples and lists, tuples and dictionaries in detail. (6) CO4
- g. Explain the following by giving suitable code: (6) CO4
- i. List Comprehension
 - ii. Packing and Unpacking in tuples

SECTION – C

4. Answer any one of the following- [5×10=50] CO
- a. Write Python Programs to print following patterns. (10) CO2
- ```

1 *
010 ***
10101 *****
0101010 ****

```
- b. Write Python Program to count the number of characters in a string using dictionaries. Display the keys and their values in alphabetical Order. (10) CO4
5. Answer any one of the following-
- a. Explain Ethics and IT policy in company. (10) CO1
- b. Explain the purpose and working of loops. Discuss Break and continue With example. Write a Python program to convert time from 12 hour to 24-hour format. (10) CO2
6. Answer any one of the following-
- a. Explain the following: (10) CO1
- i. Implicit and Explicit type-casting
  - ii. Rules for naming an Identifier
- b. Describe Arithmetic Operators, Assignment Operators, Relational Operators, Logical Operators and Bitwise Operators in detail with examples. (10) CO1
7. Answer any one of the following-
- a. Discuss Exceptions and Assertions in python. How to handle Exceptions With Try-Except? Explain 5 Built-in Exceptions with example. (10) CO5
- b. Write a Python program to check the validity of a password given by the user. The Password should satisfy the following criteria: (10) CO4
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
8. Answer any one of the following-
- a. Write Python program to sort numbers in a list in ascending order using Merge Sort. (10) CO5
- b. How memory is managed in Python? Explain PEP 8. Write a Python Program to print even length words in a string. (10) CO4