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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech (Integrated)

SEM: I - THEORY EXAMINATION (2023 - 2024)

Subject: Problem Solving using Python

Time: 3 Hours

Max. Marks: 100

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right -hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

20

1. Attempt all parts:-

- 1-a. Which of the following is an output device? [CO1] 1
- (a) Keyboard
 - (b) Mouse
 - (c) Light pen
 - (d) VDU
- 1-b. What is the value of the following expression? [CO1] 1
- $\text{float}(22//3+3/3)$
- (a) 7
 - (b) 8
 - (c) 8.3
 - (d) 8.33
- 1-c. What will be the parameters of range function for following series: 1
- 3,-5,-7,-9,-11.
- [CO2]
- (a) -3,-13,-2
 - (b) -11,-3,-2
 - (c) -3,-13,+2
 - (d) -11,-3,+1

- 1-d. Python has _____ statement as empty statement [CO2] 1
- (a) Empty
 - (b) Compound
 - (c) Pass
 - (d) All of Above
- 1-e. Suppose there is a list such that: l=[2,3,4]. If we want to print this list in reverse order, which of the following methods should be used? [CO3] 1
- (a) reverse(l)
 - (b) list(reverse[(l)])
 - (c) reversed(l)
 - (d) list(reversed(l))
- 1-f. What will be the output of the following Python code? [CO3] 1
- ```
def fun(n):
 if (n > 10):
 return n + 5
 return fun(fun(n+1));

print(fun(5))
```
- (a) 15
  - (b) 6
  - (c) 46
  - (d) 16
- 1-g. What will be the output of the following Python code? [CO4] 1
- ```
X=[[1 ,2, 3], [4, 5, 6], [7, 8, 9]]  
[[row[i] for row in X] for i in range(3)].
```
- (a) Error
 - (b) [[1, 4, 7], [2, 5, 8], [3, 6, 9]]
 - (c) 147
258
369
 - (d) (147)
(258)
(369)
- 1-h. Which of these about a frozenset is not true? [CO4] 1
- (a) Mutable Data Type
 - (b) Allows Duplicate Values
 - (c) Data Type with unordered values
 - (d) Immutable Data Types
- 1-i. What will be the output of following code. a = int("19.5") print(a) [CO5] 1

- (a) 19.5
- (b) 19
- (c) ValueError
- (d) NameError

1-j. _____ exception is raised as an error if we have problem in opening a file. [CO5] 1

- (a) IOError
- (b) ValueError
- (c) ImportError
- (d) TypeError

2. Attempt all parts:-

- 2.a. Explain the need of cache memory in system. [CO1] 2
- 2.b. What is the purpose of else in if elif ladder? [CO2] 2
- 2.c. Write a program to find the sum of all numbers in a list. [CO3] 2
- 2.d. What is split() function used for? Give an example. [CO4] 2
- 2.e. Write a program in python to check if number is prime. [CO2] 2

SECTION-B

30

3. Answer any five of the following:-

- 3-a. Write an algorithm and draw the flow chart to add first N natural number. [CO1] 6
- 3-b. Write an algorithm and draw the flow chart to find out greater among two numbers. [CO1] 6
- 3-c. Write a Python Program to Find HCF of two numbers. [CO2] 6
- 3-d. Write a Python program to accept three numbers from the user and display the second largest number? [CO2] 6
- 3.e. Write a lambda function to swap two numbers. [CO3] 6
- 3.f. Explain the different Strings format available in Python with suitable examples. [CO4] 6
- 3.g. Discuss need of finally block in exception handling with the help of suitable example. [CO5] 6

SECTION-C

50

4. Answer any one of the following:-

- 4-a. Differentiate between: [CO1] 10
 - i. Primary and Secondary Memory
 - ii. RAM and ROM
 - iii. System software and Application software
 - iv. ALU and Control Unit
- 4-b. Explain the evolution of computers. Further, state how computers in one generation are better than their predecessors. [CO1] 10

5. Answer any one of the following:-

- 5-a. What are conditional statements? Write a Python program to check whether an entered year is a leap year or not. [CO2] 10
- 5-b. Define the following with the necessary examples. [CO2] 10
- i. if statement
 - ii. if-else-if statement
 - iii. nested –if statement
6. Answer any one of the following:-
- 6-a. What is lambda function? Write a program to find average of three numbers using lambda function. [CO3] 10
- 6-b. Explain how to create a module. Implement an arithmetic calculator using module. [CO3] 10
7. Answer any one of the following:-
- 7-a. Write a program that generates a set of prime numbers and another set of odd numbers. Demonstrate the result of union, intersection, difference and symmetric difference operations on these sets. [CO4] 10
- 7-b. Give the Pseudo code and flowchart for finding the minimum in the list. Also, give a suitable Pythonic code for the above flowchart for the same problem. [CO4] 10
8. Answer any one of the following:-
- 8-a. Write a program to calculate factorial of a number and also write code to handle exception if user input negative value. [CO5] 10
- 8-b. Write a program asks for City name and Temperature and builds a dictionary using that Later on you can input City name and it will tell you the Temperature of that City.[CO5] 10