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**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**

**(An Autonomous Institute Affiliated to AKTU, Lucknow)**

**B.Tech**

**SEM: I - THEORY EXAMINATION (2022 - 2023)**

**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 the smallest unit of data in a computer. [CO1] 1
- (a) Bit
  - (b) KB
  - (c) Nibble
  - (d) Byte
- 1-b. What is the output of this expression,  $3*1**3$ . [CO1] 1
- (a) 27
  - (b) 9
  - (c) 3
  - (d) 1
- 1-c. What will be the final value of i after   
for i in range(3): [CO2] 1
- (a) 0
  - (b) 1

- (c) 2  
(d) 3
- 1-d. What is the value of s[4 :1 :-1]. [CO2] 1  
Where s="Python"  
(a) pyt  
(b) hon  
(c) yth  
(d) oht
- 1-e. Which keyword is used for function. [CO3] 1  
(a) Fun  
(b) Define  
(c) def  
(d) Function
- 1-f. A function is defined within. [CO3] 1  
(a) Module  
(b) Class  
(c) Another function  
(d) All of the mentioned
- 1-g. What will be the list comprehension to find the cube for the following: [CO4] 1  
Number=[1, 2, 3, 4, 5, 6, 7, 8, 9].  
(a) [x\*\*3 for x in Number]  
(b) [x^3 for x in Number]  
(c) [x\*\*3 in Number]  
(d) [x^3 in Number]
- 1-h. Which data structure does not support indexing. [CO4] 1  
(a) List  
(b) Tuple  
(c) Dictionary  
(d) Set
- 1-i. \_\_\_\_\_block contains code which may cause exception. [CO5] 1  
(a) try  
(b) except  
(c) else

(d) finally

- 1-j. When a variable is not define which error is raised by python. [CO5] 1
- (a) ZeroDivisionError
  - (b) NameError
  - (c) ValueError
  - (d) None of the above

**2. Attempt all parts:-**

- 2.a. What are the rules for naming an identifier. [CO1] 2
- 2.b. Print series 1,2,3,4,6,7,8,10 using continue. [CO2] 2
- 2.c. What is the use of the return statement. [CO3] 2
- 2.d. What is the difference between a tuple and a dictionary. [CO4] 2
- 2.e. Write a short note on finally block with example. [CO5] 2

**SECTION B**

**30**

**3. Answer any five of the following:-**

- 3-a. Design a flow-chart to find sum of first n natural numbers. [CO1] 6
- 3-b. Differentiate among Assembler, Compiler and Interpreter. [CO1] 6
- 3-c. Write a Python program to check whether the given number is Armstrong number or not. [CO2] 6
- 3-d. Write a program to decide given number is prime or not.[CO2] 6
- 3.e. Discuss the need and importance of function in python. [CO3] 6
- 3.f. Differentiate between the following methods of list using example: [CO4] 6
- a) append() and extend()
  - b) pop() and remove()
- 3.g. Describe different types of errors in programming language. [CO5] 6

**SECTION C**

**50**

**4. Answer any one of the following:-**

- 4-a. Draw a diagram of digital computer and explain its all components in details. 10  
(CO1)
- 4-b. Write a python program to illustrate all Bitwise operators. Also, show the expected output.[CO1] 10

**5. Answer any one of the following:-**

- 5-a. Write a Python program to enter marks of a student in four subjects. Then calculate Total and aggregate ,and display the grade obtained by the students. [CO2] 10

if the student scores greater than 100 %, then the invalid score.

If the student scores an aggregate greater than 75%, then the grade is Distinction.

If aggregate is  $60 \leq \text{and} \leq 75$ , then the grade is First Division.

If aggregate is  $50 \leq \text{and} \leq 60$ , then the grade is Second Division.

If aggregate is  $40 \leq \text{and} < 50$ , then the grade is third Division.

Otherwise the grade is fail.

5-b. Write a Python Programs to print following patterns. [CO2] 10

```
1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
```

**6. Answer any one of the following:-**

6-a. A 4 digit integer is entered through the keyboard. Write a function to calculate the sum of the 4 digit number both without recursion and using recursion.[CO3] 10

6-b. Write short notes on: [CO3] 10  
(a.) Keyword Arguments  
(b.) Default Arguments  
(c.) Lambda functions

**7. Answer any one of the following:-**

7-a. What is List? Write Python program to sort words in a sentence in decreasing order of their length. Display the sorted words along with their length. [CO4] 10

7-b. Explain all the data types in python with suitable example of each type. [CO4] 10

**8. Answer any one of the following:-**

8-a. Explain try, except, else and finally block with their syntax and also discuss application of these blocks. [CO5] 10

8-b. A file named DATA.txt contains a series of integer numbers. Write a program to read these numbers then write all "odd" numbers to a file to be called ODD.txt and all "even" numbers to a file to be called EVEN.txt.[CO5] 10