Printed Page:- **Subject Code:- AMCA0305**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MCA

SEM: III - THEORY EXAMINATION (20 .... - 20 ....)

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 one of the following is the correct extension of the Python file? (CO1) 1

(a) .py
(b) .python
(c) .p
(d) None of the these

1-b. Which operators are used to combine clauses within an if statement ? (CO1) 1

(a) and
(b) or
(c) not
(d) Both A and B

1-c. Which of the following is false about "from-import" form of import? (CO2) 1

(a) The syntax is: from modulename import identifier
(b) This form of import prevents name clash
(c) The namespace of imported module becomes part of importing module
(d) The identifiers in module are accessed directly as: identifier

1-d. Which of the following is not a boolean expression? (CO2) 1

(a) 3!= 7
(b) 3 == 4
(c) 3 + 4

(d) 3 + 4 == 7

1-e. Which of the following feature is also known as run-time binding or late binding? (CO3) 1

(a) Dynamic typing
(b) Dynamic loading
(c) Dynamic binding
(d) Data hiding

1-f. The assignment of more than one function to a particular operator is _____ (CO3) 1

(a) Operator over-assignment
(b) Operator overriding
(c) Operator overloading
(d) Operator instance

1-g. Which of these about a dictionary is false? (CO4) 1

(a) Dictionaries are mutable
(b) Dictionaries aren't ordered
(c) The values of a dictionary can be accessed using keys
(d) The keys of a dictionary can be accessed using values

1-h. What happens when '1' == 1 is executed? (CO4) 1

(a) we get a True
(b) we get a False
(c) an TypeError occurs
(d) a ValueError occurs

1-i. How the grid() function put the widget on the screen ? (CO5) 1

(a) According to x,y coordinate
(b) According to row and column vise
(c) According to left,right,up,down
(d) None of the above

1-j. Recommanded way to load matplotlib library is (CO5) 1

(a) import matplotlib.pyplot as plt
(b) import matplotlib.pyplot
(c) import matplotlib as plt
(d) import matplotlib

2. Attempt all parts:-

2.a. Define Python. How it is different from other language? (CO1) 2

2.b. What are the 4 scope rules of variables in Python? (CO2) 2

2.c. What is an operator overloading ? (CO3) 2

2.d. How do you get a list of all the keys in a dictionary? (CO4) 2

2.e.	Differentiate between Matplotlib and NumPy. (CO5)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Differentiate between type-conversion and type-casting.(CO1)	6
3-b.	Differentiate between for loop and while loop in Python. (CO1)	6
3-c.	Demonstrate filter( ) function with example. (CO2)	6
3-d.	What are variable length arguments with example? (CO2)	6
3.e.	How is a constructor different from a method? (CO3)	6
3.f.	What are the different modes of files in python ? (CO4)	6
3.g.	Demonstrate NumPy array iterating with example. (CO5)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Explain the different types of operators available in Python and provide examples for each type. (CO1)	10
4-b.	What is the purpose of else clause in looping? Explain how else works with while and for loops with examples. (CO1)	10

5. Answer any one of the following:-

5-a.	Explain recursion. Write a program to reverse a string using recursion. (CO2)	10
5-b.	Write a program in Python to generate random number using randrange( ) function. (CO2)	10

6. Answer any one of the following:-

6-a.	How abstraction can be achieved in Python? Write a Python program that includes an abstract class called "Vehicle". Implement three derived classes: "Car", "Motorcycle", and "Truck". Each derived class should inherit from the "Vehicle" abstract class and define appropriate methods. Finally, print the details of each vehicle. (CO3)	10
6-b.	What is inheritance in object-oriented programming, and what are the various types of inheritance? Provide examples to illustrate each type of inheritance. (CO3)	10

7. Answer any one of the following:-

7-a.	Write a Python program to sort (ascending and descending) a dictionary by value .(CO4)	10
7-b.	Discuss the advantages and dis-advantages of tuples over list with example. (CO4)	10

8. Answer any one of the following:-

8-a.	Write a program to draw a line graph with x-label as "x" and y-label as "y" for the equation y=mx+c. Here m=2 and c=3 (CO5)	10
8-b.	Describe at least five different types of widgets available in Tkinter and provide a brief explanation of each.(CO5)	10