USN | | | | | | | | | | | **21EC643**

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025
Python Programming

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain different types of 'If' statements supported by Python. Explain each type with appropriate example program and flow chart. **(08 Marks)**

   b. Demonstrate the use of 'break' and 'continue' with while loop with suitable example in python. **(06 Marks)**

   c. Write the syntax, description of any 3 built in functions that are used in python. Give example for each. **(06 Marks)**

OR

2 a. Write a python program to create a function called 'collatz( )' which reads a parameter named 'number'. If the number is even, the function should return number //2 and if the number is odd then it should return 3 * number + 1. Display the returned value. This function should be called continuously until the function returns a value 1. **(08 Marks)**

   b. Define scope of the variables. Illustrate with suitable example, the local and global scope variables used in python. **(08 Marks)**

   c. List the naming rules to be followed in python for identifiers. **(04 Marks)**

Module-2

3 a. What is list? Explain the concept of slicing and indexing related with lists with proper examples. **(06 Marks)**

   b. Write a python program to create and fill the list with 10 integers collected from user at run time. Also count the even numbers and odd numbers of this list and display the counts. **(06 Marks)**

   c. Explain the pyperclip.copy( ) and paste( ) functions with example program. **(08 Marks)**

OR

4 a. Explain any 4 string methods in python with example code snippets. **(08 Marks)**

   b. Compare dictionary with list. Write a python program to accept a sentence and find the total number of words and display. Create a dictionary named 'd' that collects the number of upper case letters, lower case letter and digits used in the given sentence. **(08 Marks)**

   c. Differentiate get( ) and setdefault( ) methods with appropriate code snippets. Mention their outputs. **(04 Marks)**

Module-3

5 a. What is regular expressions? Explain the process of finding patterns of text with regular expression and associated methods in python with an example. **(07 Marks)**

   b. Describe the following with suitable python code snippet:
   (i) Greedy and non-greedy pattern matching
   (ii) findall( ) method of regex object **(07 Marks)**

   c. Explain saving of variables using shelve module. **(06 Marks)**

OR

6 a. Explain the file reading, writing process with suitable python program. **(07 Marks)**

   b. Explain the following OS related methods with suitable code snippet:
   (i) getcwd( )   (ii) chdir( )   (iii) listdir( ) **(06 Marks)**

   c. List and explain shorthand code for common character classes. Illustrate how do you define your own character class. **(07 Marks)**

Module-4

7 a. Write a python program to define a class named 'rectangle' with the following attributes height, width and a member function named 'grow_rectangle'. The grow_rectangle takes a rectangle object and two numbers dheight and dwidth as arguments and returns the modified height and width. Display the height and width of rectangle before and after. **(06 Marks)**

   b. What is class? How do you define a class in python? How to instantiate the class and access its members? **(07 Marks)**

   c. Explain the operator overloading with example code. **(07 Marks)**

OR

8 a. Explain _ _init_ _ and _ _str_ _ methods. **(06 Marks)**

   b. With example program, explain the type based dispatch concept. **(07 Marks)**

   c. What is pure function? Illustrate with an example python program. **(07 Marks)**

Module-5

9 a. Write a python program to retrieve the image over HTTP and save the image to a file named 'stuff.jpg'. **(08 Marks)**

   b. What is JSON? Explain the json module of python. Demonstrate with a python program. **(06 Marks)**

   c. List and explain the three different kinds of keys used in data base model. **(06 Marks)**

OR

10 a. Explain in detail how to parse HTML with the BeautifulSoup. **(07 Marks)**

   b. Write a simple python application that parses some XML and extracts some data elements from XML. **(06 Marks)**

   c. What is a database? Write a code to create a table named 'Tracks' with two columns in the database named 'title' and 'plays'. **(07 Marks)**

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