(Please write your Exam Roll No.) Exam Roll No. .....

END TERM EXAMINATION

THIRD SEMESTER [BCA] DEC 2025-JAN 2026

Paper Code: BCAT-211 **Subject: Basics of Python Programming**

Time: 3 Hours **Maximum Marks: 60**

Note: Attempt all questions as directed. Internal choice is indicated.

Q1. Attempt **any Four** of the following questions: **(4x5=20)**

(a) What is Scope in Python?

(b) How do binary files differ from text files?

(c) What is the difference between a Mutable data type and an Immutable data type?

(d) Define lists and tuples in python. Differentiate Between List and Tuple in Python.

(e) What is IDLE in Python? Describe its features and how it enhances the programming experience for beginners.

(f) Explain string slicing in Python. Provide the syntax for slicing and an example that demonstrates how to extract a substring from a given string.

(g) Describe how to create and initialize a list in Python. Explain the use of the max(), min(), and sum() functions on lists.

(h) Explain split() and join() functions in Python with example.

Q2. (a) What is the general structure of a Python program? How does indentation affect the code structure in Python? **(4)**

(b) Write a program to input 10 student's score in a subject in list and check whether they passed or failed. If passed, print count of students achieved - a distinction, 1st Division and Pass class. **(6)**

OR

Q3. (a) Given the string phrase = "Welcome to the world of Python, Learning Python is fun ", **(10)**

i) Find the position of the first occurrence of the substring "Python" and print the index.

ii) Print the number of occurrences of "Python".

iii) Print the reverse of string.

iv) Replace all occurrences of the word "Python" with "Programming".

v) Change the case of each character occurring in the string.

Q4. (a) Write a program to create a tuple containing the following elements: Student name, year of admission, and score of qualifying examination. Explain how you would access and print the Year and Score from this tuple. **(5)**

(b) Explain append, extend, insert, pop and remove in context of List. **(5)**

OR

Q5. (a) What are the main structural differences between a list and a dictionary? In what scenarios would you prefer to use a dictionary over a list? Write a code snippet to create a dictionary with at least three key-value pairs. **(6)**

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(b) What does the len(), clear(), copy(), update() function return, when applied to a dictionary? **(4)**

Q6. (a) Define what is a module in Python. Explain the difference between a module and a package with examples. Explain how to import a module in Python. **(5)**

(b) Write a Python program that uses the random module to generate a random floating-point number between 0 and 1. Also, create a list of 10 random integers between 1 and 50. Show how to sort this list in ascending order. **(5)**

OR

Q7. (a) What are nested packages? Create a package named utils that contains two modules: string_utils.py (with a function to reverse a string) and math_utils.py (with a function to calculate the factorial). Describe how to import modules and use functions from both modules. **(5)**

(b) Explain how pip is used for package management in Python. Write the commands to install, upgrade, and uninstall packages using pip. **(5)**

Q8. Explain how to read and write CSV files in Python using the csv module. Write a program that reads a CSV file containing student names and scores, calculates the average score, and writes the results to a new CSV file. **(10)**

OR

Q9. Provide code snippets to Create a 3x3 NumPy array and perform the following operation and explain what each operation does. **(10)**

i) Access and print the element located in the second row and second column.
ii) Transpose the array.
iii) Flatten the array to a one-dimensional array.
iv) Concatenate it with another 3x3 array filled with ones.
v) appends a new row to it.

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