

No. of Printed Pages : 6

MCS–201

POST GRADUATE DIPLOMA IN

COMPUTER APPLICATIONS

(PGDCA–NEW)

Term-End Examination

June, 2024

MCS-201 : PROGRAMMING IN C AND PYTHON

Time : 3 Hours

Maximum Marks :100

Weightage : 70%

Note : *Question No. 1 is compulsory. Attempt any*

three questions from the rest.

1. (a) Draw flowchart and write algorithm to print factorial of a number entered by the user. 5

P. T. O.

- (b) Write recursive and iterative code in C, to find sum of numbers from zero to n , where n is the number entered by the user. 6
- (c) What are lambda functions ? Discuss the utility of lambda functions. Write lambda function in Python to calculate cube of a number, entered by the user. 6
- (d) What is overloading and overriding in Python ? Give suitable example code for each. 5
- (e) Explain the concept of call by value, with suitable code in C. Give advantage and disadvantage of call by value. 6
- (f) Briefly discuss the syntax and functionality of `map()` function in Python. Write a program in Python to print the square of the numbers present in the list, using `map()` function. 6

- (g) Write a program in C to determine simple interest and compound interest. Make suitable assumptions and support your code with suitable comments. 6
2. (a) What are storage classes ? How do storage classes differ from data types in C ? Discuss all *four* types of storage classes. 8
- (b) Differentiate between static variable and dynamic variable. Give suitable example for each. 4
- (c) In context of Python, differentiate the following : 8
- (i) Co-routines and Subroutines
- (ii) Co-routines and Threads
3. (a) Differentiate between Random access and Sequential access of files in C. Discuss the

syntax and role of `fseek()` and `rewind()` function, while accessing any file randomly. 7

(b) Write Python code to perform the following : 7

(i) Reading data from a file

(ii) Creating file and add content to it

(c) Write syntax for various looping controls. Also draw flowchart of each, to exhibit their respective execution of statements. 6

4. (a) Write a program in C to copy the content of one text file to another text file. Support your program with suitable comments. 6

(b) Write a program in C to verify that the string entered by the user is a palindrome or not. Support your program with suitable comments. 4

(c) Write Python code to perform the following : 10

(i) Copy content of file first.txt to second.txt

(ii) Reading a file

(iii) Writing a file

(iv) Appending a file

5. (a) What is a package in Python ? How does it relate to module, library and framework ? Write the steps to create a package in Python. Also, illustrate the application of these steps with suitable example code in Python. 8

(b) Write an algorithm to find the slope of a line segment whose input comprises of the end point coordinates i. e. (x_1, y_1) and

(x_2, y_2) , and output comprises of the slope of line (which may be positive, negative or zero). Transform your algorithm into C program. Support your code with suitable comments. 8

{**Note** : Slope of line segment

$$= \frac{(y_2 - y_1)}{(x_2 - x_1)} \}.$$

(c) Compare C and Python, as programming languages. 4