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MCS–201

**POST GRADUATE DIPLOMA IN
COMPUTER APPLICATIONS
(PGDCA—NEW)**

Term-End Examination

December, 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) Describe Logical errors and Runtime errors, with suitable example code in C, for each. 5
- (b) Write a program in C to find the length of a string, without using `strlen( )` function. Support your code with suitable comments. 5

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- (c) Illustrate the concept of “Call by Reference” with suitable code in C. Also give *one* advantage and *one* disadvantage of “Call by Reference.” 5
 - (d) Differentiate between Structure and Union in C. Give suitable example code segment for each. 5
 - (e) Write a program in Python to swap two numbers entered by the user, without using temporary variable. Support your code with suitable comments. 5
 - (f) Explain Lambda functions, with the help of a suitable code in Python. 5
 - (g) What is operator overloading ? How is it achieved in Python ? Discuss with the help of a suitable example. 5
 - (h) Briefly discuss the concept of Decorators in Python. Also discuss the utility of Decorators with suitable code in Python. 5
2. (a) Draw flow chart to find maximum of the three numbers entered by the user. Also, write algorithm for the same. Transform your algorithm into a suitable code in C. Support your code with suitable comments.

- (b) Write steps and Python code to create a package named 'Area' and create 3 modules in this package i.e. 'Area.' The modules may be named as square, circle and rectangle, each having a function to calculate area of square, circle and rectangle respectively. Import the module in separate location and use the functions. 10
3. (a) Differentiate between the following (Give suitable code in C for each) :
- (i) Break and Continue 5
 - (ii) While and do—while loops 5
- (b) Write program in Python to perform the following :
- (i) Find sum of all odd and even numbers upto a number specified by the user. 5
 - (ii) Check if a given year is a leap year or not ? 5
4. (a) Write a program in C to copy the content of one file to another file. Support your program with suitable comments. 10

- (b) Briefly discuss the interrelation between Framework, Library, Package and Module in Python. Give suitable example for each.

10

5. Differentiate between the following : $4 \times 5 = 20$

- (i) Co-routines and Subroutines
- (ii) Mutable and Immutable data types
- (iii) Random Access and Sequential Access of files
- (iv) Overloading and Overriding

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