| **MCS-201**

# POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS (NEW) (PGDCA (NEW))

## Term-End Examination

## June, 2022

## MCS-201 : PROGRAMMING IN C AND PYTHON

*Time : 3 hours*                    *Maximum Marks : 100*
                                    *(Weightage : 70%)*

*Note : Question number **1** is **compulsory**. Attempt any **three** questions from the rest.*

1.  (a)   Compare flowchart and algorithm. Draw a flowchart to find the factorial of a number entered by a user.    *5*

    (b)   Write a program in C to print all ASCII codes. Support your program with suitable comments for better readability.    *5*

(c) Discuss the terms **Typedef** and **Typecast** in C, with the help of a suitable example of each. Analyse the code given below and give its output : 5

```
main( )
{
  int a, b = 5;
  float f;
  a = 5/2;
  f = (float) b/2·0;
  (a < f) ? b = 1 : b = 0;
  printf("b = %d", b);
}
```

(d) Explain the concept Call by Reference. Give a suitable code in C to support your explanation. Also give the advantage of Call by Reference over Call by Value concept. 5

(e) What is Jython ? How does Jython work ? Compare module and package in the context of Python. 5

(f) What are tuples in Python ? What do you understand by the term "tuples are immutable" ? Write Python syntax for creation, printing and accessing specific element of the tuple. 5

(g) What does map( ) function do ? Write a program in Python to print the cube of the numbers present in the list, by using map( ) function. *5*

(h) What are Generators in Python ? Compare Generators and Lists. Also discuss the utility of Generators in Python. *5*

**2.** (a) What is MySQL.Connector ? Briefly discuss the methods used by MySQL.Connector to establish connection and retrieve records from the database. *10*

(b) Write steps to create a package. Apply these steps to create a package named volume and create 3 modules in it named cube, cuboid and sphere, having function to calculate volume of the cube, cuboid and sphere respectively. Import the modules defined in the package and use the defined functions for calculation of volume respectively. *10*

**3.** (a) Write Python codes to perform the following : *10*

   (i) Reading data from a file.

   (ii) Creating a file and adding contents to it.

(b) Write an algorithm to print the Fibonacci series. Transform your algorithm into Python code, "To print the Fibonacci series up to n terms, entered by the user". *10*

**4.** (a) Compare Sequential and Random access of files in C. Briefly discuss the syntax and role of fseek( ) and rewind( ) function, while accessing a file randomly. *10*

(b) Write an algorithm to find the HCF (Highest Common Factor) of the two numbers entered by a user. Transform your algorithm into a C program, support your program with suitable comments. *10*

**5.** (a) Briefly discuss the relation between pointers and arrays, giving suitable example. Write a program in C, to print transpose of a 2D matrix entered by a user. Also give comments. *10*

(b) Write the syntax of looping control statements. Also draw the flowchart for each statement. Write a program in C to generate the following pattern : *10*

1
1 2
1 2 3

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