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(REVISION — 2015)

Reg. No. .....

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

OBJECT ORIENTED PROGRAMMING THROUGH C++

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. List any two preprocessor directives.
2. List the two parameter passing methods in C++, other than Call by Reference.
3. List the two access specifiers used in inheritance, other than Public.
4. List any two keywords that are associated with exception handling in C++.
5. What are the default storage classes of global variables and local variables ?

(5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Develop a program to read the Employee code, Name and Salary of an employee into a structure variable and display the same.
2. Explain break statement and continue statement with proper examples for each.
3. Define function overloading. Write a program to find the area of a Rectangle, Square and a Circle using function overloading.
4. Explain about any 2 types of constructors in C++.
5. Explain about Friend functions. Give an example.

Marks

6. Create a class *Rectangle* with member variables *length* and *breadth,* and suitable member functions for input, area calculation and output. Create another class *Box,* inheriting *Rectangle* with member variable *Height* and required member functions. Write a program to find the bottom area and volume of a box using the above classes.

7. Explain about exception handling in C++. (5×6 = 30)

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) Explain about the different looping statements in C++. Give examples. 9

(b) Write a program to check whether the given number is Prime or not. 6

OR

IV (a) Write a program to read the Roll no, Name, Marks of Physics and Marks of Chemistry of N students of a class and display the Roll no, Name and Total marks of Science (sum of Physics and Chemistry) of the students, using structure. 10

(b) List the user defined data types in C++. 5

UNIT — II

V (a) Write Programs to swap (interchange) the values of two variables by,
(i) Using a function with call by pointer (ii) Using a function with call by reference. 10

(b) Differentiate Constructors and Destructors. 5

OR

VI (a) Explain about the 3 access control specifiers used inside the class. How they are used to control access to class member variables. 8

(b) Develop a function **nextfib()** which returns the next fibonacci term on successive calls to the function, starting from the first term. Use static variables, if required.
[Hint : If the Fibonacci series is 0 1 1 2 3 5 8..., the first call to **nextfib()** should return 0, on next call 1, then 1, then 2 and so on.] 7

UNIT — III

VII (a) Write an object oriented program to add two complex numbers using operator overloading. Include a member function to display the complex number in its proper format as "X + iY", where X is the real part and Y is the imaginary part of the number. (if Y is ⁻ve, it should be displayed as "X – iY").

[Hint : If the complex numbers are, C1 = X1 + iY1 and C2= X2 + iY2, then C1 + C2 = (Xl + X2) + i(Y1 + Y2)] 15

OR

Marks

VIII (a) Explain Single inheritance and Multilevel inheritance with suitable examples. 9

(b) Write a friend function **addlength()**, for class *Length*, which adds and displays the sum of two *Length* objects passed to it in Meters and Centimeters. Also write the statement to declare the function as a friend function in a class. 6

UNIT — IV

IX (a) What are templates in C++ ? Explain about Template functions and Template classes with examples. 8

(b) Write a program which reads two integers, divides the first number by the second number and displays the quotient. Use exception handling mechanism in C++ to handle the possibility of a division by zero exception. 7

OR

X (a) Write a program to find the largest of two values, which may be both integer, float or char variables, using a function template. 9

(b) Draw the block diagram and explain Multiple inheritance. 6