2020

MATHEMATICS — GENERAL

Paper : SEC-A

(Object Oriented Programming in C++)

Full Marks : 80

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words
as far as practicable.

1. Each question below is followed by four possible answers, exactly one of which is correct. Choose the correct answer with proper justification/explanation (wherever applicable) in support of your answer.

2×10

(a) Which of the following statements is incorrect about the 'void pointer'?

   (i) Void pointer is declared with the data type of void.

   (ii) Void pointer can hold the address of a character type variable.

   (iii) A void pointer can be assigning to an integer pointer.

   (iv) None of these.

(b) The ability to declare different methods with the same name in a class is known as

   (i) Overloading   (ii) Overriding

   (iii) Recursion   (iv) None of these.

(c) A variable defined within a block is visible

   (i) from the point of definition onward in the program

   (ii) from the point of definition onward in the function

   (iii) from the point of definition onward in the block

   (iv) throughout the function.

(d) The library function exit() causes an exit from

   (i) the loop in which it occurs   (ii) the block in which it occurs

   (iii) the function in which it occurs   (iv) the program in which it occurs.

(e) A friend function can be called

   (i) by using object of the class   (ii) directly

   (iii) should not be called   (iv) like a standard function.

Please Turn Over

(f) The && and || operators

    (i) compare two numeric values   (ii) combine two numeric values

    (iii) compare two Boolean values   (iv) combine two Boolean values.

(g) Which of the following function declaration using default arguments is correct?

    (i) `int set (int x, int y = 5, int z = 7)`

    (ii) `int set (int x = 6, int y, int z)`

    (iii) `int set (int x = 5, int y = 10, int z)`

    (iv) all are correct.

(h) In inheritance, order of execution of base class and derived class destructors are

    (i) base to derived   (ii) derived to base

    (iii) random order   (iv) depends on compiler.

(i) Which is the default access specifier of a structure in C++?

    (i) Private   (ii) Public

    (iii) Protected   (iv) None of these.

(j) Which keyword is used to access the variable in namespace?

    (i) Dynamic   (ii) Using

    (iii) Static   (iv) Const.

Unit - I

2. Answer *any two* questions :

(a) (i) What is object-oriented programming? How is it different from the procedure-oriented programming?

    (ii) What are the unique advantages of an object-oriented programming paradigm?   5+5

(b) State the basic differences between C and C++. Discuss the history of C++. Write down the short note on arrays and pointer.   3+3+4

(c) Write a C++ program to find the binary representation of a given positive number.   10

(d) (i) How does a main() function in C++ differ from main() in C?

    (ii) What are pointers? Explain with an example.

    (iii) Identify the error in the following program :

```
Void main()
{
    int i = 0;
    i = i + 1;
    cout << i <<" ";
    /*comment\*//i = i + 1;
    cout << i;
}
```
     3+4+3

Unit - II

3. Answer *any two* questions :

(a) What is a constructor? Explain different types of constructor with example. What is the advantage of user-defined copy constructor over default copy constructor? 3+3+4

(b) Distinguish between the following terms :
   (i) Objects and Classes
   (ii) Data abstraction and Data encapsulation
   (iii) Inheritance and Polymorphism. 3+3+4

(c) What is the use of operator overloading? Write a C++ program to add two given 2×2 matrices using operator overloading. 2+8

(d) What is inheritance? Mention some advantages of inheritance. Describe different types of inheritance with examples. 3+3+4

Unit - III

4. Answer *any two* questions :

(a) (i) What is an exception?
   (ii) How is an exception handled in C++?
   (iii) What are the advantages of using exception handling mechanism in a program? 2+3+5

(b) What is template class? How is it different from class template? Explain with suitable example. How is template function advantageous over function overloading? 3+2+3+2

(c) (i) What are the differences between exception handling and traditional error handling?
   (ii) What is the usefulness of exception handling?
   (iii) What is copy constructor? 5+3+2

(d) (i) What is namespace in C++? What is the correct syntax of defining a namespace?
   (ii) How do we access the variables declared in a named namespace?
   (iii) What is wrong with the following namespace definition?

```
Namespace  Main
{
    int  main( )
    {
        //  .................
    }
}
```
4+4+2

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