

2 0 1 1

PGDCA

Paper : 2.1

(Programming in C++)

Full Marks : 100

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Choose the correct answer : 1×10=10

(a) C++ is a

- (i) object-based programming language**
- (ii) object-oriented programming language**
- (iii) object-oriented database system**
- (iv) None of the above**

(b) Cout is a/an

- (i) function**
- (ii) variable**
- (iii) object**
- (iv) class**

- (c) Member functions of a class can be accessed by
- (i) member functions
 - (ii) friend functions
 - (iii) object of the class
 - (iv) All of the above
- (d) In C++ size of a float, variable is
- (i) 1-byte
 - (ii) 4-bit
 - (iii) 4-byte
 - (iv) compiler dependent
- (e) Which one is not a type of polymorphism?
- (i) Function overloading
 - (ii) Function overriding
 - (iii) Operator overloading
 - (iv) Operator overriding
- (f) :: is used to
- (i) access global variable
 - (ii) define member function outside the class
 - (iii) Both (i) and (ii)
 - (iv) None of the above

- (g) In case of single inheritance there is/are
- (i) one base class
 - (ii) one derived class
 - (iii) one base class and one derived class
 - (iv) one base class and multiple derived classes
- (h) When an object is declared the function executed first is
- (i) main()
 - (ii) constructor
 - (iii) destructor
 - (iv) None of the above
- (i) Protected data members are able to be accessed in
- (i) member function of the derived class
 - (ii) member function of the base class
 - (iii) object of the derived class
 - (iv) Both (i) and (ii)
- (j) Which one is not an identifier?
- (i) main()
 - (ii) printf()
 - (iii) strlen()
 - (iv) break

2. Fill in the blanks :

1×10=10

- (a) Class is used to create — data type.
- (b) A class that provides only the interface of one or more functions and not their implementations is known as an —.
- (c) cerr is the — stream that is associated with the standard error device.
- (d) "Gauhati University" is an example of — constant.
- (e) ? : is — operator.
- (f) — converts uppercase letters in a string to lowercase.
- (g) Parameters in the function call are called — parameters.
- (h) — members of a base class cannot be inherited.
- (i) — is a type of inheritance in which more than one class is derived from one base class.
- (j) — members of a class can be access outside the class.

3. Match Column—A with Column—B : $1 \times 10 = 10$

Column—A	Column—B
(a) Protected	(i) Conditional control
(b) Destructor	(ii) Keyword
(c) Data abstraction	(iii) Assignment operator
(d) Dynamic memory allocation	(iv) Reference variable
(e) Call by reference	(v) Calls itself during execution
(f) Recursive function	(vi) Macro
(g) ==	(vii) New
(h) More than one base class	(viii) Cannot be overloaded
(i) #define	(ix) OOP property
(j) While	(x) Equality operator
	(xi) Inheritance
	(xii) Multiple inheritance

4. State whether True or False : $1 \times 10 = 10$

- (a) Constructor does not have any return type.
- (b) Pointer and reference variable are same.
- (c) By default a data member of a class is public.
- (d) Protected and private data members of a base class are inherited into the derived class.
- (e) ++ can be overloaded.
- (f) Friend is a keyword.

- (g) To exit from a loop control, continue statement can be used.
- (h) typedef is used to create new type of datatype.
- (i) `int A[20][30]` is an integer array where at most 50 integer values can be stored.
- (j) In C++ function overriding is done by using virtual function.
5. (a) Define encapsulation with an example. Explain the advantages of object-oriented programming. 3+4=7
- (b) Write down the different applications of object-oriented programming. 5
- (c) Explain function call by value and call by reference. 5
6. Answer any *three* of the following questions : 3×3=9
- (a) Define inheritance with an example.
- (b) `int a, b;`
`a = 5;`
`b = 6;`
`a += b + +;`
`cout << a;`
What is the output of the above programming statements?
- (c) What are the differences between class and struct?

- (d) Explain friend function.
- (e) Write down the syntax of the conditional controls in C++.

7. Answer any *four* of the following questions :

5×4=20

- (a) Write a C++ program to find out the summation of all the numbers stored in an integer array.
- (b) Explain parameterized and default constructor.
- (c) What is string? Write down two string library functions with syntax.
- (d) Write a program in C++ to input the marks of three subjects and print the division for the marks obtained according to the following :

<i>Average Marks</i>	<i>Grade</i>
0 to 29	Fail
30 to 44	Third division
45 to 59	Second division
60 to 74	First division
75 to 100	Star

- (e) What is function prototype? Write down the advantages and disadvantages of writing program using function.
- (f) Explain function overloading with an example.

- (g) Write a C++ function where a string is passed and which will count the number of vowels present in the string and return it and if there is no vowel present then it returns zero.

8. Answer any *two* of the following questions :

7×2=14

- (a) Define a class named 'Employee' which contains the following data members :

(i) ename; (ii) eid; (iii) eaddress;
(iv) edesignation; (v) ebasic; (vi) edept;
(vii) edob.

Here ebasic is the basic salary and edob is date of birth of the employee.

Initialize the ebasic to 0.00 using a constructor. Write down a two member functions to input and display the different informations of an employee.

- (b) Write a C++ program to implement bubble-sort algorithm.
- (c) Explain briefly single inheritance with an example.
- (d) Write a C++ program to count the number of vowels in an input string using class concept.
