Bihar Engineering University, Patna

B.Tech. 3rd Semester Examination, 2023

Course: B.Tech.
Code: 100313

Subject: Object Oriented Programming using C++

Time: 03 Hours
Full Marks: 70

Instructions:-

(i) The marks are indicated in the right-hand margin.
*(ii) There are **NINE** questions in this paper.*
*(iii) Attempt **FIVE** questions in all.*
(iv) Question No. 1 is compulsory.

Q.1 Choose the correct answer of the following (Any seven question only): **[2 x 7 = 14]**

(a) To prevent any method from overriding we declare the method as

(i)) static (ii) final (iii) const (iv) None of the above

(b) Does constructor overloading include different return types for constructors to be overloaded?

(i) yes, if return types are different, signature becomes different.
(ii) yes, because return types can differentiate two functions.
(iii) no, because return types cannot differentiate two functions.
(iv) no, constructors don't have any return type.

(c) Which of the following type of class allows only one object of it to be created

(i) Virtual Class (ii) Abstract class
(iii) Singleton class (iv) Friend class

(d) What will happen if the exception is not caught in the program?

(i) Error (ii) Program will execute
(iii) Block of the code will not execute (iv) None of the above

(e) In C++ dynamic memory allocation is accomplished with the operator

(i) new (ii) melloc
(iii) this (iv) allocate

(f) Which of the following statement is correct?

(i) base class pointer cannot point to derived class.
(ii) derived class pointer cannot point to base class.
(iii) pointer to derived class cannot be created.
(iv) pointer to base class cannot be created.

(g) You should make a function virtual if

(i) every class that is derived from this class uses all the member functions from this class.
(ii) every class that is derived from this class needs to redefine this function.
(iii) that function is an operator.
(iv) defined only in the derived classes.

(h) The fields in a structure in C and a class in C++ are by default

(i) public, protected (ii) protected, public
(iii) private, private (iv) public, private

(i) Class Dog: public X, public Y is an example of

(i) multiple inheritance (ii) multilevel inheritance
(iii) linear inheritance (iv) none of the above

(j) The compiler identifies a virtual function to be pure

(i) by the presence of the keyword pure.

(ii) by its location in the program.

(iii) if it is equated to 0.

(iv) none of the above

Q.2 (a) Explain in brief the benefits of object-oriented programming over procedure oriented programming. [7]

(b) With an example explain the terms *constructor* and *destructor*. [7]

Q.3 (a) Explain different access specifiers and their scope used in C++. [7]

(b) What are the advantages of passing arguments by reference? Write a function called zeroSmaller() function that receives two integer arguments by reference and then sets smaller of the two numbers to zero. Add the code for main() function also from where zeroSmaller() is called. [7]

Q.4 (a) Discuss why converting a base class pointer to a derived class pointer is considered dangerous by the compiler. [7]

(b) Write a C++ program to find a substring inside a string. [7]

Q.5 (a) Differentiate between abstract class and interface. [7]

(c) What is function template? Differentiate between template class and class template. [7]

Q.6 (a) What are the different forms of inheritance? Give an example for each. [7]

(b) What is a friend function? A friend function cannot be used to overload the assignment operator (=). Explain why? [7]

Q.7 (a) With the help of example programs, differentiate between Overloading and Overriding. [7]

(b) Write an object oriented program in C++ to show the overloading of template function. [7]

Q.8 (a) Write an object oriented program in C++ using function overloading to check whether the input data (either strings or integers) are palindrome or not, and display the results accordingly. [7]

(b) What is the difference between error and exception? When do we use multiple *catch* handlers? Explain with suitable example. [7]

Q.9 Write short notes on ***any two*** of the following: **[7x2=14]**

(a) Copy constructor

(b) Pure virtual function

(c) Object pointer

(d) Stack unwinding