

SL.No. of Question Paper: 1755

Unique Paper Code : CSDC-1-101 2341101
Name of the Paper : Programming Fundamentals
Name of the Course : B.Tech in Computer Science
Semester : I Semester (First Year)
Duration of Examination : Three Hours
Maximum Marks : 75 marks

F-3

Instructions for candidates :

There are two parts of the question paper. Part I: Part 1 has one question which is compulsory. Part II: Attempt any *four* out of six questions.

Part I Question No. 1 is compulsory

Q1 a)	Give the output of the following code : i) <pre>int i=0,x=0; while (i<20) { if (i%5==0) { x+=i; cout<<x; } ++i; } cout<<endl<<x;</pre>	3
	ii) <pre>int a=5; char b='A'; cout<<a++; cout<<a; cout<<++a; cout<<a; cout << a+1; cout<<b+10;</pre>	3
	iii) <pre>bool b; string s1 ("DU"); string s2 ("DU!"); b = (s1==s2); cout << b << endl;</pre>	2
b)	Indicate the errors if any and correct them giving reasons. i) <pre>for (i=1;i<100;i++)</pre>	2

	<pre> { j=0; while (j<i) cout<<i+j; ++j; } </pre>	
	<pre> ii) int & f(int x, int y) { int z ; return &z ; } </pre>	2
	<pre> iii) void fun() throw () { int x=3;throw x; } </pre>	2
c)	<p>Write a while loop to perform the job of the following code:</p> <pre> int l=9; cout<<l<<endl; l=l-3 ; cout<<l;<<endl;l=l-3; cout<<l<<endl ;l=l-3 ; cout<<l<<endl ; </pre>	3
d)	<p>Write a C++ statement to create a character array of 8 characters and initialize the array with the value "B.Tech".</p>	2
e)	<p>What is the difference between private inheritance and public inheritance? Explain with an example.</p>	2
f)	<p>What are the differences between function overloading and function overriding? Explain with an example.</p>	2
g)	<p>What do you mean by abstract class? What is its purpose?</p>	2
h)	<p>Mention any two applications of using arrays. Give a brief explanation.</p>	3
i)	<p>Write a function to overload '-' operator which subtracts two fractions where fraction class is declared as follows:</p> <pre> class Fraction { int numerator; int denominator; Fraction (int numer, int denom) {numerator = numer; denominator = denom;} } </pre>	3
j)	<p>Mention the situations in which copy constructor of a class is called.</p>	3

Q2 a)	Write a program that prints the following pattern 1 3 5 7 9 1 3 5 7 1 3 5 1 3 1 Input to program is the number of lines	5
b)	Let s1 and s2 be C++ strings. Write string functions for the following: i) compare first 8 characters of s1 with the last 8 characters of s2. ii) append characters 5 to 9 of s1 at the end of s2. iii) replace first 8 characters of s1 with the last 8 characters of s2	2 1 2
Q3 a)	Write a function that inputs two numbers to be divided. It should handle divide by zero exception which throws a user defined exception with message "bad operator".	5
b)	Write a code fragment that tests the value of an integer num1. If the value is 10, square num1. If it is 9, read a new value into num1. If it is 2 or 3, multiply num1 by 99 and print out the result. Use if statements.	3
c)	Which of the following are not valid identifiers? i) A3 ii) if iii) IF iv) tax-rate	2
Q4. a)	What is the output of the following code: <pre>int n=10; while (n>0) n /=2; cout << n * n << endl;</pre>	2
b)	Write a function to input two arrays A and B, each of 10 integers. The function returns true if every element of array A is equal to its corresponding element in array B, otherwise it returns false.	4
c)	Given the following declaration: <pre>int i1, i2; float f1; char c1, c2, c3</pre> and the following line of data 14 23 76 CD What would be the value of i1, i2, f1, c1, c2 and c3 after the following statement? <pre>cin >> i1 >> i2 >> f1 >> c1 >> c2 >> c3;</pre>	3
d)	Explain the purpose of const keyword in the following statements: i) <pre>double average(const int x[]);</pre>	2

	ii) void print() const;	
Q5.a)	Can we have more than one constructor in a class? Explain in brief. Is it true for destructor and copy constructor also?	3
b)	<p>A class declaration for fraction class is given as follows:</p> <pre> Class Fraction { int numerator =0; int denominator =0; Public: void store(int numer,int denom); void print() const; } </pre> <p>Answer the following questions:</p> <p>i) What is wrong in the declaration? Correct that.</p> <p>ii) Write an appropriate constructor in which numerator is specified by the user and default value of 1 is taken as denominator.</p> <p>iii) Write a statement for creating an object fr1 of class Fraction.</p> <p>iv) What is the output of the statement <pre> Fraction fr2(fr1); </pre></p> <p>v) Write a destructor that prints the message "Object has been deleted".</p> <p>vi) Let fr1 be an object of class Fraction. Explain whether the following statement is correct? <pre> fr1.numerator = 10; </pre></p>	<p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
Q6.a)	<p>Consider the following declarations and answer the following:</p> <pre> class P { int h; protected: int s; public: void input(); void output(); }; class Q: private P { int t; protected: int u; public: void indata(); void outdata(); }; class R: public Q </pre>	

	<pre> { int m; public: void disp(); }; </pre> <p>i) Name the base class and derived class of the class Q. 2</p> <p>ii) Name the data member(s) that can be accessed from function disp(). 2</p> <p>iii) Name the member function(s) which can be accessed from the objects of class R. 2</p> <p>iv) Is the member function output() accessible by the objects of the class Q? Give reason. 2</p>	
b)	What is the difference between compile time and run time polymorphism?	2
Q7 a)	<p>What would be printed from the following program:</p> <pre> #include <iostream> long strange (long, long); int main() { long a = 3; long b = 5; long c = 4; long d = 6; long r = strange(a,b); long s = strange(r,c); long t = strange(strange(s,d), strange(4,2)); cout << r << " " << s << " " << t << endl; } </pre>	5
b)	Given a file which has some blank lines in it, write a program that creates a new file and copies the non blank lines of the given file to the newly created file. Print both the files.	5