

B2.51-R3: INTRODUCTION TO OBJECT ORIENTED PROGRAMMING AND C++

NOTE:

1. There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
2. **PART ONE** is to be answered in the **TEAR-OFF ANSWER SHEET** only, attached to the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book.
3. Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the answer sheet for **PART ONE** is returned. However, candidates, who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the answer sheet for **PART ONE**.

TOTAL TIME: 3 HOURS

TOTAL MARKS: 100
(PART ONE – 40; PART TWO – 60)

PART ONE **(Answer all the questions)**

1. **Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the “tear-off” answer sheet attached to the question paper, following instructions therein. (1 x 10)**
 - 1.1 Which of the following cannot be passed to a function?
 - A) Pointers.
 - B) Arrays.
 - C) Function name.
 - D) Header files.
 - 1.2 Static variable in a function is considered as
 - A) Global variable to the whole program.
 - B) Global to main () function.
 - C) Global to the function in which it is declared.
 - D) None of the above.
 - 1.3 Which of the following are not keywords?
 - A) double
 - B) int
 - C) NULL
 - D) None of the above
 - 1.4 When the break statement is encountered inside a loop, which one of the following occurs?
 - A) Control goes to the end of the program.
 - B) Control leaves the function that contains the loop.
 - C) Causes an exit from the innermost loop containing it.
 - D) Causes an exit from all the nested loop.
 - 1.5 Which of the following are valid methods for accessing the first element of the array item?
 - A) item.1
 - B) item[1]
 - C) item[0]

D) item(0)

- 1.6 Inline function acts as a
- A) Function.
 - B) Macro.
 - C) Operator.
 - D) Manipulator.
- 1.7 A global variable declaration is made
- A) Only in main function.
 - B) Only in functions other than main function.
 - C) Only outside functions.
 - D) None of the above.

1.8 Binary overloaded operators are passed.

- A) two arguments
 - B) one arguments
 - C) no arguments
 - D) three arguments
- 1.9 ios represents
- A) A class member function.
 - B) A constant object.
 - C) A stream.
 - D) A base class.
- 1.10 #include is a
- A) Compiler statement
 - B) Debugging statement
 - C) Pre-processor statement
 - D) None of the above

2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the “tear-off” sheet attached to the question paper, following instructions therein. (1 x 10)

- 2.1 Pointer to a function cannot be created.
- 2.2 Virtual classes are the same as virtual function.
- 2.3 A class object can have a pointer, but its data members cannot have pointers.
- 2.4 For destroying class objects, we use garbage collector technique.
- 2.5 Virtual functions cannot be static members.
- 2.6 iostream is inherited from istream, ostream and ios class.
- 2.7 Functions can return an object.
- 2.8 Macros work in the same way as functions work.
- 2.9** Function parameter cannot be a given default value.
- 2.10 Template is a keyword.

3. Match words and phrases in column X with the closest related meaning/ word(s)/phrase(s) in column Y. Enter your selection in the “tear-off” answer sheet attached to the question paper, following instructions therein. (1 x 10)

X		Y	
3.1	A class that contains objects of other classes.	A.	Multiple inheritance
3.2	Functions in C++ can be given default values.	B.	Hierarchical inheritance
3.3	Making an outside member function as an inside member function.	C.	Memory taken by data members and members functions
3.4	Upon creation of objects they occupy memory space.	D.	Using object pointers
3.5	A variable is normally used to maintain values common to the entire class.	E.	Destructor
3.6	Derivation of several classes from a single base class.	F.	Private or Public
3.7	A function is invoked when the scope of the object is over.	G.	Container class
3.8	The visibility mode in the derivation of a new class can be	H.	Private or Protected or Public
3.9	Virtual functions are accessed in a program.	I.	Prototypes
3.10	Derivation of a single class from many base classes.	J.	Static data member
		K.	Inline
		L.	Memory taken by data members only
		M.	Constructor

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Enter your choice in the “tear-off” answer sheet attached to the question paper, following instructions therein. (1 x 10)

A.	public	B.	namespace name	C.	constructor
D.	istream&	E.	Standard Template Library	F.	free store
G.	stream&	H.	Local	I.	friend
J.	class	K.	global	L.	Open
M.	compile-time	N.	flush	O.	run-time

- 4.1 Classes can be defined and used inside a function or a block. Such classes are called as _____ classes.
- 4.2 Same variable declared and assigned with different values in various nested blocks can be accessed by using _____.
- 4.3 The class cannot have virtual _____, but can contain virtual destructor.
- 4.4 The new and **delete** are known as _____ operators.
- 4.5 The typeid operator is used to find the type at _____ of unknown objects.
- 4.6 The collection of generic classes and functions is called _____.
- 4.7 The flag **ios::stdio** is used to _____ stdout and stderr after insertion.
- 4.8 _____ functions have access to the private and protected members of a class.
- 4.9 To get benefits of virtual functions supporting runtime polymorphism, they should be declared in the _____ section of a class.
- 4.10 The overloading of extraction operator for user defined types should have a return type of _____.

PART TWO
(Answer any **FOUR** questions)

5. Write a program in C++, to create a STUDENT class having name of student maximum of 20 characters, and the (whole number) individual marks in four tests and the average (whole number) of these four tests as elements of the class. Also the member function AVG (), READDATA () and DISPLAY () of the class. Read the value of N as number of students, and their names and respective marks in four tests and store these N student objects in the program dynamically. Now process this information in member function AVG () to find the average of marks of these N individual students and store them in the average data member of these N objects. If the remainder of the average is greater than or equal to 50% of the divisor, increment the average by one. Print the name and average of the tests for all students. (15)
6. Design classes such that they support the following statements:
Dollar d1, d2;
Rupee r1, r2;
Write a complete program which does such conversions according to the world market value. Take \$ 1 = Rupee 39.45 as a conversion factor. (15)
7.
a) What are manipulators? Write the general form of the user defined manipulators.
b) Design a single manipulator **format** to provide the following output specifications for printing float values:
i) 10 columns width.
ii) Right-justified.
iii) Two digits precision.
iv) Filling of unused places with *.
v) Trailing zeroes shown.
c) Can we place two or more catch blocks together to catch and handle multiple types of exceptions thrown by a try block? If your answer is yes, please write the syntax. (5+5+5)
8. Write a program **disp** to display the contents of a random file beginning with the location you specify on the command line.
disp file.txt 15 (15)
9.
a) Write a program to demonstrate the catching of all exceptions. What happens when a raised exception is not caught by catch-block (in the absence of catching all exceptions block)?
b) What is a class template? Write a template-based complete program for adding two objects of the **vector** class. Use dynamic data members instead of arrays for storing vector elements. (8+7)