BTS-III(R/S)-01-23-1448 Reg. No. [redacted]

A

B.Tech. Degree III Semester Regular/Supplementary Examination January 2023

CS 19-202-0304 OBJECT ORIENTED PROGRAMMING

(2019 *Scheme*)

Time: 3 Hours Maximum Marks: 60

Course Outcomes

On successful completion of the course, the students will be able to:

CO1: Find the basics of OOPS and relate object-oriented approach for design software.
CO2: Demonstrate the adaptness of various object oriented concepts in developing solutions to problems.
CO3: Design and implement efficient programs for a given problem by incorporating features such as encapsulation, abstraction ,inheritance etc.
CO4: Analyze the polymorphic behavior of objects both in run time and compile time.
CO5: Choose between the different inheritance structures according to the problem and practice reusability.
CO6: Experiment with generic programming and exception handling capability of ++.
CO7: Learn the features and usage of file handling statements in C++.

Bloom's Taxonomy Levels (BL): L1 – Remember, L2 – Understand, L3 – Apply, L4 –Analyze, L5 – Evaluate, L6 – Create

PO – Programme Outcome

PART A

(Answer *ALL* questions)

		(8 × 3 = 24)	Marks	BL	CO	PO
I.	(a)	Illustrate call by value and call by reference parameter passing techniques with a C++ program.	3	L3	1	1,2,3
	(b)	Illustrate inline functions with a C++ program.	3	L3	1	1,2,3
	(c)	Illustrate the use of static data member of a class by using a C++ program.	3	L3	2	1,2,3
	(d)	Illustrate the use of destructors with a C++ program.	3	L3	2	1,2,3
	(e)	Explain abstract classes.	3	L2	2	1,2,3
	(f)	Explain pure virtual functions.	3	L2	2	1,2,3
	(g)	Explain the various file opening modes.	3	L2	7	1,2,3
	(h)	Explain seekg(),seekp(),tellg() and tellp() functions.	3	L2	7	1,2,3

PART B

(4 × 12 = 48)

II.	(a)	Compare object oriented programming paradigm and procedure oriented programming paradigm.	6	L1	1	1,2,3
	(b)	Write a program using function overloading to find the median of the unsorted array if the array is passed along with the character 'M' to the function, otherwise find the average of the array, if only the array is passed.	6	L3	4	1,2,3

OR

(P.T.O.)

			Marks	BL	CO	PO
III.	(a)	Explain the basic concepts of object-oriented programming.	5	L1	1	1,2,3
	(b)	Create two classes, Manager and Supervisor. The manager's salary is calculated by adding the components BasicPay, DA (expressed as a percentage of basic pay), and HRA and deducting the loan cutting per month. The supervisor has daily wages, but will be paid only at the end of the month and is eligible for a yearly bonus. Write a friend function that can access the net salary of both types of employees and will calculate the amount to be paid annually towards income tax. If Net salary < 5,00,000, Tax = NIL If Net salary > 5,00,000 and < 7,00,000, Tax = 20% of the excess amount. If Net salary > 7,00,000, Tax = 30% of the excess amount.	7	L3	3	1,2,3
IV.	(a)	Write C++ programs to implement default constructor, parameterized constructor and copy constructor.	6	L3	2	1,2,3
	(b)	A hospital keeps the information about rooms in a class represented by the type of room (S, D, E stands for Single, Double or Executive), Room rent/day, and nursing charges/day. When a Patient is admitted to the hospital, his patient id, name and choice of room will be inputted. Write a program representing the system where the total bill is prepared for each patient, which will be the sum of room rent and the nursing care charges for the days he/she spent there. Also, count the number of patients so far admitted to the hospital.	6	L3	3	1,2,3
		OR				
V.	(a)	Write C++ program to overload one unary operator, by writing operator functions.	5	L3	2	1,2,3
	(b)	Define a class to represent the data with members' day, month and year. Overload the operator – such that it operates on two date objects so as to return the number of days of duration between them.	7	L3	4	1,2,3
VI.	(a)	Explain single inheritance, multilevel inheritance, multiple inheritance, hierarchical inheritance and hybrid inheritance.	7	L2	5	1,2,3
	(b)	How is the order of execution of constructors in multiple inheritance structures with and without virtual base classes?	5	L2	5	1,2,3
		OR				
VII.	(a)	Illustrate run time polymorphism with a C++ program.	7	L3	4	1,2,3
	(b)	Illustrate the use of **this** pointer in at least TWO situations where it can be conveniently used.	5	L3	1	1,2,3
VIII.	(a)	Write a C++ program for opening two files in the suitable modes and to copy data from one file to another.	6	L3	7	1,2,3
	(b)	What are the file stream objects used for file processing? How do we choose the suitable one? How do you distinguish between binary and ASCII files?	6	L2	7	1,2,3
		OR				
IX.	(a)	Write a C++ function to find the square function of each data type using a single template.	6	L2	6	1,2,3
	(b)	Write a C++ program to illustrate exception handling.	6	L3	6	1,2,3

Bloom's Taxonomy Levels
L1 = 9.166%, L2 = 30%, L3 = 60.83%.

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