CAT-2

REG.NO.: 24BCI0025

VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2024-2025

SLOT: B1

Programme Name & Branch : B.Tech CSE, BAI, BCT,BCB, BCI
Course Code and Course Name : BCSE102L & Structured and Object-Oriented Programming
Faculty Name(s) : VIMALA DEVI K,VINILA JINNY,VISWANATHAN A, BERLIN M A,JASMIN T.JOSE, RAJARAJAN G, KANAGARAJ R, MUCHENEDI HARI KISHOR, GOUTAM MAJUMDER, ARUMUGA ARUN R, RANJITHKUMAR S, JAYACHANDRAN J.
Class Number(s) : VL2024250501460, VL2024250501471, VL2024250501482, VL2024250501486, VL2024250501500, VL2024250501505, VL2024250501522, VL2024250501556, VL2024250501564, VL2024250501579, VL2024250501590, VL2024250501596
Date of Examination : 17/03/25
Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes

CO2: Recognize the application of modular programming approach; create user-defined data types and idealize the role of pointers.
CO3: Comprehend various elements of the object-oriented programming paradigm; propose solutions through inheritance and polymorphism; identify the appropriate data structure for a given problem and devise solutions using generic programming techniques

Q. No	Question	M	CO	BL
1.	1. Write a C program to accept sales information of a grocery shop using structures and dynamic memory allocation. The program should store the salesperson's name and the total sales amount made by each salesperson. Calculate the total sales made by the shop. Display the sales amount of individual salespersons and the total sales amount of the shop.	10	CO 2	BL 3
2.	In C++, explain through your own program to demonstrate the following concepts, a) In what way we can automatically initialize the values to the data member of the class and how the parameter gets the input value at the time of object creation. (4 marks) b) Consider the way where one member function contains multiple parameters. Out of which, atleast one argument value is default. (4 MARKS) c) Explain the way by which the compiler can delete the memory created by the object implicitly. (2 marks)	10	CO 3	BL 3

3.	a) Complete the following C++ program to access the private members of the given class "Rectangle." To print the area of rectangle.
	#include <iostream>
	using namespace std;
	class Rectangle {
	private:
	int length, width;
	Rectangle(int l, int w) {
	.....//fill the remaining code.....
		5	CO 3	BL 4

	b) Fix the Error in the Following Code. After fixing the code, clearly explain what the error was and why your fix works.
	`#include <iostream>`
	`using namespace std;`
	`class Car {`
	`public:`
	`  static int totalCars;`
	`  string model;`
	`  Car(string m) {`
	`  model = m;`
	`  totalCars++; }`
	`  static void showTotalCars() {`
	`  cout << "Total Cars: " << totalCars << endl;`
	`  }`
	`};`
	`int totalCars = 0;`
	`int main() {`
	`  Car car1("Tesla");`
	`  Car car2("BMW");`
	`  Car car3("Audi");`
	`  car1.showTotalCars();`
	`  return 0;`
	`}`
	int Car::totalCars = 0;
	Car car1::showTotalCars();
		5		

4.	Create two base classes named Passenger (passenger-name, age, gender) and Transport (vehicle-no, seat-no, fare-per-km). Derive a class TravelDetails from these two base classes with an additional attribute distance-traveled. Print the passenger details, transport details, distance traveled, and the total fare for the journey.	10	CO 3	BL 2
5.	A sports academy keeps track of the performance of athletes during a training session. The academy records the number of push-ups each athlete completes. Since the number of athletes varies each day, the academy needs a flexible system to store and analyze this data. You have been asked to develop a C program that will: 1. Dynamically allocate memory to store the number of push-ups completed by each athlete. 2. Use a function to accept the push-up counts from the user. 3. Use another function to find and return the maximum and minimum push-ups using pointers (without using array indexing []). 4. Use a function to deallocate memory after use. At the end of the program, print: The athlete with the highest push-ups, The athlete with the lowest push-ups, A message confirming that memory was successfully deallocated	10	CO 2	BL 4

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