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Roll No. .....

TBC–202/TBI–203

B. C. A./B. Sc. (IT)

(SECOND SEMESTER)

END SEMESTER EXAMINATION,

July/Aug., 2022

OBJECT ORIENTED PROGRAMMING

USING C++

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

(ii) Answer any *two* sub-questions among (a), (b) and (c) in each main question.

(iii) Total marks in each main question are twenty.

(iv) Each sub-question carries 10 marks.

1. (a) Describe major parts of a C++ program. (CO1)

P. T. O.

(b) Define classes in C++ ? Create a class with the following data members.

Name of the class : student

Data members : sname, sroll_number, scourse, year, and college_name

Member functions : put_details() and get_details() to set and display student details respectively ? (CO1)

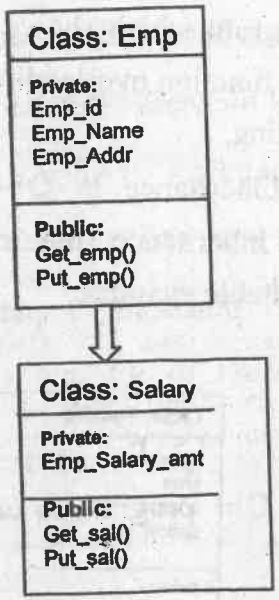
(c) Write a C++ program to calculate simple interest and compound interest. (CO1)

[Simple_Intrest=Principal*Rate*Time /100.

Compound_Intrest=Principal(1+ rate)^{Time}-Principal]

2. (a) Define friend function. State how friend function is different from normal function, explain by using a suitable example. (CO2)

(b)



Write a C++ code to show the class hierarchy shown above. Also, write a code to accept emp_id,emp_name,emp_address and emp_salary and display them. (CO2)

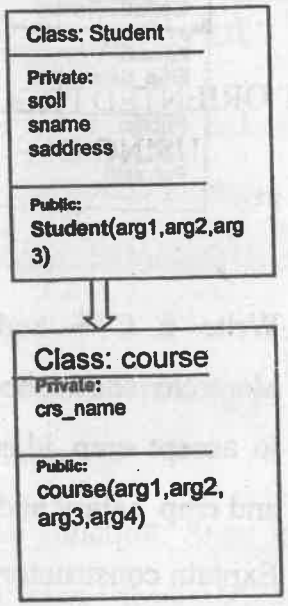
(c) Explain constructor and destructor in C++. State the use of copy constructor and explain when we need copy constructor by using a suitable example. (CO2)

P. T. O.

3. (a) What is operator overloading ? Write a C++ program which shows the difference between function overloading and operator overloading. (CO3)

(b) Define Inheritance in C++. Explain all types of inheritance supported in C++ by using suitable example. (CO3)

(c)



Write a C++ code to perform below mentioned tasks (Use the above diagram) :

Design a class student contains three data members sroll, sname and saddress. Here, write a constructor in C++ which assigns the value to class data members through its arguments.

Also, design a class called course which consists of crs_name and constructor having fours parameters. Write a C++ code to pass values to base class (student) constructor using derived (course) class constructor. (CO3)

4. (a) Illustrate the difference between the following : (CO4)

(i) Virtual Function and Pure virtual Function.

(ii) Virtual Base Class and Abstract Class

(b) Define Polymorphism and it's classification in C++. Write C++ code which states the difference between runtime and compile time polymorphism. (CO4)

(c) What is template in C++ ? Write a C++ template for swapping two numbers.(CO4)

5. (a) Write a C++ code to copy the contents of student_reg.txt to student_admitted.txt. (CO5)

(b) Define Exception in C++. Write a C++ code which shows the difference between a basic error and an exception. (CO5)

(c) Explain STL. Write a C++ code which shows the implementation of Vector and Lists in C++. (CO5)