H   Roll No. ....

TCS–307

B. TECH. (CSE) (THIRD SEMESTER) MID SEMESTER EXAMINATION, 2021

OOPS WITH C++

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) (i) Create a dynamically allocated array of person objects, and initialize those person objects with the help of pointer–using different combinations of constructors. Once the program finishes, free up the memory used by the object.

(ii) Describe various access specifiers in C++. Also explain the suitability of their use with sample programs.

10 Marks (CO2)

OR

(b) (i) Write a C++ program to compare age of two persons using friend functions.

(ii) Write a C++ program to create a class distance with the following specifications :

Private Members :

| Meter (m) | int type |
| Centimeter (cm) | int type |

Public Members :

Input( ) to read the values of m and cm from the user

Add(Distance, Distance) this function will take objects as arguments and return the object that contain. sum of two distance.

Display( ) to display the values of m and cm.   10 Marks (CO2)

2. (a) Explain static data member and static member function. Write a program to count number of objects created in a class.

10 Marks (CO2)

OR

(b) (i) What is dynamic memory allocation in C++ ? How can it be achieved ? Explain with a C++ program.

(ii) Input a string which contains some palindrome substrings. Find out the position of palindrome substrings if exist and replace it by '*'. (For example if input string is "bob has a radar plane" then it should convert in "*** has a ***** plane".

10 Marks (CO1)

3. (a) (i) Explain the concepts of object oriented programming.

(ii) Provide differences between object oriented programming and procedural oriented programming paradigms.

10 Marks (CO2)

P. T. O.

OR

(b) Create a C++ program to perform survey on four different models of Maruti (Maruti-K10, Zen-Astelo, Wagnor, Maruti-SX4) owned by persons living in four metro cities (Delhi, Mumbai, Chennai and Kolkata). Display tabulated report like format given below :

	Maruti-K10	Zen-Astelo	Wagnor	Maruti-SX4
Delhi				
Mumbai				
Chennai				
Kolkata				

Calculate number of cars of different models in each metro city.

10 Marks (CO2)

4. (a) Create a class of students, in that consider their names, age and section. In the same

class, create a – (subtract) overloading operator to find the age gap of two students.

Example :

[Student is a class in C++]

Student s1("Nitin", 30, "A");

Student s2("Amit", 25, "B");

Student s3 = s1 – s2;

s3.ageGap( );

10 Marks (CO2)

OR

(b) Write a C++ program which contains a function that uses pointers to print all elements of an array and their corresponding address in reverse order. Array elements should be inputted from the user in the main function and then above function should be called appropriately.

P. T. O.

Function signature :

void reverse (int *ptr, int n)–where ptr is pointer to an array passed from main function and n is the number of elements in the array.

Sample Input :

[4, 8, 1, 5]

Sample Output :

element – 5 is at address – 123456

element – 1 is at address – 123452

element – 8 is at address – 123448

element – 4 is at address – 123444

10 Marks (CO2)

5. (a) (i) What do you mean by instance member hiding and how to resolve it ? Explain with a suitable program.

(ii) What is inline function and what are its restrictions ? Also write about the advantages and disadvantages of inline function. 10 Marks (CO1)

OR

(b) (i) What are manipulators ? Provide at least *three* manipulators with example.

(ii) Write a short note on reference variable with example.

(iii) Difference between class and structure in C++.

10 Marks (CO1)

1360