DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2018

Course: B. Tech in Information Technology **Sem: III**
Subject Name: Object Oriented Paradigm with C++ **Subject Code: BTITC303**
Max Marks: 60 **Date:05/12/18** **Duration: 3 Hr.**

Instructions to the Students:

1. *All questions are compulsory.*
2. *The level question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level /CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	What is an algorithm? What is/are the need(s) of writing algorithm? What is class diagram? What are the components of class diagram? Explain with the help of diagram.	**CO1**	**6**
B)	What is reference variable? What is its major use? Write a function using reference variable as argument to swap the values of pair of integers.	**CO5**	**6**

C)	i. Enumerate the rules of naming variables in C++. How do they differ from ANSI C rules?
	ii. Describe the major parts of C++ program. How does a main function in C++ differ from main () in C?
	Identify error in the following program
	#include <iostream.h>
	void main()
	{
	short i=2500, j=3000,
	cout>>" i + j =" >>-(i + j);
	}
		CO5	**6**

Q.2	**Solve Any Two of the following.**		
A)	A friend function cannot be used to overload the assignment operator =. Explain why? When is a friend function compulsory? Give an example.	**CO5**	**6**

B)	What is constructor? Is it mandatory to use constructors in a class? How do we invoke constructor function? List some of the special properties of the constructor functions. Can we use more than one constructor in a class? If yes, explain the need of such a situation.	**CO3**	**6**
C)	What is type conversion? A class alpha has a constructor as follows: alpha (int a, double b);Can we use this constructor to convert types? We have two classes X and Y. If a is an object of X and b is an object of Y and we want to say a=b; What type of conversion routine should be used and where?	**CO3**	**6**

Q. 3 Solve Any two of the following.

A)	**i.** What is a virtual function? Why do we need virtual functions? When do we make a virtual function "pure"? What are the implications of making a function a pure virtual function? **ii.** What is an exception? How is an exception handled in C++? What are the advantages of using exception handling mechanism in a program? When should a program throws an exception?	**CO3** **CO4**	**6**
B)	What do you mean by function overloading? Explain with an example when do we use this concept. On what basis, the compiler distinguishes between a set of overloaded functions having the same name?	**CO4**	**6**
C)	Write a function to read a matrix of size m*n from the keyboard.	**CO2**	**6**

Q.4 Solve Any Two of the following.

A)	Distinguish between the following terms: i. Objects and classes ii. Data abstraction and data encapsulation iii. Inheritance and polymorphism iv. Dynamic binding and message passing	**CO2** **CO3** **CO4** **CO5**	**6**
B)	What does polymorphism means in C++ language? How polymorphism achieved at i. Compile time ii. Run time?	**CO4**	**6**
C)	Define a class String. Use overload == operator to compare two strings.	**CO2**	**6**

Q. 5 Solve Any One of the following.

A)	i. What does inheritance mean in C++? Class D is derived from class B. The class D does not contain any data members of its own. Does the class D require constructors? If yes, why? What is containership? How does it differ from inheritance? Describe how an object of a class that contains objects of other classes created? ii. What are the different forms of inheritance? Give an example for each. iii. We know that a private member of a base class is not inheritable. Is it anyway possible for the objects of a derived class to access the private members of the base class? If yes, how? Remember, the base class cannot be modified.	**CO3**	**12**
B)	Create two classes DM and DB which stores the value of distances. DM stores distances in meter and centimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM with another object of DB. Use friend function to carry out the addition operation. The object that stores the results may be DM object or DB object, depending on the units in which the results are required. The result should be in the format of feet and inches or meters and centimeters depending on the object on display.	**CO2**	**12**

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