(Please write your Exam Roll No.) *Exam Roll No.* 00114202015

END TERM EXAMINATION

THIRD SEMESTER [BCA] DECEMBER 2016

Paper Code: BCA-209 ***Subject: Object Oriented Programming Using C++***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt any five questions including Q.no.1 which is compulsory. Select one question from each Unit.

Q1 Explain briefly the following: **(10x2.5=25)**

(a) Differentiate between OOP and Procedural programming
(b) Pure virtual function
(c) Inline functions
(d) Garbage Collection
(e) Early v/s Late Binding
(f) Nested Classes
(g) This pointer
(h) Static data member
(i) Copy constructor
(j) Protected keyword

Unit-I

Q2 (a) Define encapsulation and prove how it allows us to achieve data Hiding giving an example code. **(6.5)**

(b) Why did people change over from structured programming to object oriented programming? **(6)**

Q3 (a) Describe the usage of const in C++. **(3)**

(b) Explain the use of volatile keyword in C++. **(3.5)**

(c) How input and outputs are taken/displayed in C++? Differentiate between the input and outputs operators in C and C++. **(6)**

Unit-II

Q4 (a) What is meant by dynamic initialization of objects? Why is it needed? How is it accomplished? Illustrate. **(6)**

(b) Create a String class to create empty strings or create strings from other strings passed as argument to its constructor. Memory allocation for creation and disposal of strings will be dynamic. The string class will have one char pointer to point the string and member length to hold the length of this string. Write the Constructor and destructors for this class. Show () method to print the strings right aligned on the screen. **(6.5)**

Q5 (a) What is the principal reason of passing arguments by references? Explain with the help of example. **(6.5)**

(b) Create a time class to perform following operations over time (hh:mm:ss) using 24 hrs clock. To create or initialize any object of type time using constructors. To print the time in the format hh:mm:ss. **(6)**

P.T.O.

Unit-III

Q6 (a) WAP to overload binary + operator to concatenate two objects of user defined class String. **(6)**

(b) Discuss various ambiguities in Multiple Inheritance and also explain how they can be overcome in C++. **(6.5)**

Q7 (a) Consider an example of declaring the examination result. Design three classes: Student, Exam and Result. The student class has data members such as those representing the roll number, name etc. Create the class Exam by inheriting the student class. The Exam class adds data members representing the marks scored in six subjects. Derive the Result from Exam class and its own data members such as total_marks. Write an interactive program to model this relationship. **(7.5)**

(b) Explain the concept of function overloading. Write a program to demonstrate function overloading for function swap () to swap values corresponding to different data types using C++ code. **(5)**

Unit-IV

Q8 (a) Define generic function and generic class, also give their syntax. **(6.5)**

(b) Write a template class to sort n items in descending order. The values should be entered by user. **(6)**

Q9 (a) Explain how compiler processes call to class template. **(6)**

(b) Can we have template class with more than one type of argument? Explain with help of an example. **(6.5)**

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