

Code: AC55/AT55/ AC105/AT105 Subject: OBJECT ORIENTED PROGRAMMING WITH C++

AMIETE – CS/IT (Current & New Scheme)

Time: 3 Hours

JUNE 2015

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

- Which of the following type of class allows only one object of it to be created?
(A) Virtual class (B) Abstract class
(C) Singleton class (D) Friend class
- Which of the following concepts means determining at runtime what method to invoke?
(A) Data hiding (B) Dynamic typing
(C) Dynamic binding (D) Dynamic loading
- How many types of polymorphisms are supported by C++?
(A) 1 (B) 2
(C) 3 (D) 4
- Which of the following statement is correct?
(A) A constructor is called at the time of declaration of an object
(B) A constructor is called at the time of use of an object
(C) A constructor is called at the time of declaration of a class
(D) A constructor is called at the time of use of a class
- Which of the following approach is adapted by C++?
(A) Top-down (B) Bottom-up
(C) Right-left (D) Left-right
- Which of the following concepts means wrapping up of data and functions together?
(A) Abstraction (B) Encapsulation
(C) Inheritance (D) Polymorphism

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- g. Which of the following operator is overloaded for object cout?
- (A) >> (B) <<
(C) + (D) =
- h. Which of the following concept of OOPs allows compiler to insert arguments in a function call if it is not specified?
- (A) Call by value (B) Call by reference
(C) Default arguments (D) Call by pointer
- i. Which of the following cannot be used with the keyword virtual?
- (A) class (B) member functions
(C) constructor (D) destructor
- j. Which of the following ways are legal to access a class data member using this pointer?
- (A) this->x (B) this.x
(C) *this.x (D) *this-x

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

- Q.2** a. Explain in detail various OOPs concept in C++. (6)
- b. Write a program in C++ to find the factorial of any number entered through the keyboard. (4)
- c. Write a program in C++ to convert decimal to binary. (6)
- Q.3** a. Write a program that accepts number as input and prints a grade depending on the number range, (80 and above) Grade 'A', (60 to 79) Grade 'B', (40 to 59) Grade 'C' and (Below 40) Grade 'F'. You should take the number as input and print the corresponding letter grade. Use *if-then-else* structure OR *switch-case* for your program. (8)
- b. What is character array? How character array can be initialized? (2+2)
- c. Write the rules for using indirection operator (*) and address-of operator (&). (4)

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- Q.4** a. What do you mean by function overloading? Write a C++ program to swap two integer, float and character variables using function overloading. (2+6)
- b. What do you mean by static variable and static function? Give an example. (8)
- Q.5** a. What are the similarities and differences between a class and a structure? (8)
- b. What is the relationship between a class and an object? (4)
- c. What is the difference between constructor and destructor? (4)
- Q.6** a. What is Operator Overloading? Explain its syntax? Name which operators can-not be overloaded? (8)
- b. Explain with the help of program, how 'new' and 'delete' operators can be overloaded. (8)
- Q.7** a. Discuss multiple inheritance with proper syntax and rules in C++. (8)
- b. Explain, with the help of a program, the order in which constructors are invoked when there is multiple inheritance. (4)
- c. What is virtual function? Explain the syntax of pure virtual function. (2+2)
- Q.8** a. What is an exception? Explain the usage of nested try-catch block. Is it necessary that number of catch blocks should be equal to the number of try blocks? Justify. (2+3+3)
- b. Define a class template Queue with put() and get() operations. Using this create a Queue of integers in main() and add two elements to the queue. (8)
- Q.9** a. Give the difference between manipulators and ios member functions. (8)
- b. Explain the meaning of following state flags:
- | | | |
|-------------|-------------|-------|
| (i) bad() | (ii) fail() | (2×4) |
| (iii) eof() | (iv) good() | |