

AMIETE – CS/IT (OLD SCHEME)

Time: 3 Hours

DECEMBER 2011

Max. Marks: 100

NOTE: There are 9 Questions in all.

- Please write your Roll No. at the space provided on each page immediately after receiving the Question Paper.
- 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)

- a. The substitution of replicated code in place of function call is made by compiler in
- (A) Recursive function (B) void function
(C) Inline function (D) All of the above
- b. _____ pointer contains the address of the invoking object so that it can refer to data and other functions in the class.
- (A) Macro (B) that
(C) Reference (D) this
- c. Assume a class C with objects obj1, obj2, and obj3. For the statement obj3 = obj1 - obj2 to work correctly, the overloaded - operator must
- (A) use the object of which it is a member as an operand
(B) directly access the member without object
(C) defined by compiler
(D) None of the above
- d. Inheritance is a way to
- (A) make general classes
(B) add features to existing classes without rewriting them
(C) pass arguments to objects of classes
(D) improve data hiding and encapsulation
- e. _____ tells the compiler to bind a function with an object during _____ time, not with the pointer defined during compile time.
- (A) Inline, run (B) Virtual function, run
(C) Virtual function, compile (D) Inline function, compile

- f. An exception is typically caused by
- (A) a runtime error
 - (B) the creator of a class who writes the class member functions
 - (C) the programmer who writes an application's code
 - (D) an operating system malfunction that terminates the program
- g. Template classes eliminate code _____ for different data types and makes program management easier.
- (A) duplication
 - (B) generation
 - (C) initialization
 - (D) All of the above
- h. To write data that contains variables of type float to an object of type of stream, we should use
- (A) seekg()
 - (B) the insertion operator
 - (C) write()
 - (D) put()
- i. _____ are special functions that can be included in I/O statements to alter the format parameters of a stream:
- (A) Specification
 - (B) Specialization
 - (C) Generalization
 - (D) Manipulators
- j. Any method of a _____ class can access private and protected members of the other class.
- (A) nested
 - (B) friend
 - (C) template
 - (D) abstract

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

- Q.2** a. Define the following features of Object Oriented Programming language:
- (i) Data encapsulation
 - (ii) Data hiding
 - (iii) Data abstraction
 - (iv) Message passing
- (8)**
- b. Compare the following:
- (i) object-based programming languages and object-oriented programming languages.
 - (ii) Static binding and dynamic binding.
- (8)**
- Q.3** a. Explain method overloading and method overriding. Give examples for each. **(3+5)**

- b. Virtual destructors are valid but not the virtual constructors. Justify your answer. (4)
- c. Explain the role of access specifiers in inheritance. (4)
- Q.4** a. Explain characteristic features of the following:
(i) Class scope (ii) Nested class (iii) Local class (6)
- b. Explain the functionality of Union as space saving class. (4)
- c. Write a program to illustrate Friend Class. (6)
- Q.5** a. Mention any four limitations of operator overloading. (4)
- b. Explain the features of user defined conversions in operator overloading. (4)
- c. Write a program to overload ++ and << operators. (8)
- Q.6** a. Write a template function that returns the average of all the elements of an array. The arguments to the function should be the array name and the size of the array (type int). In main(), invoke the function with arrays of type int, long, double, and char. (6)
- b. Give an example to illustrate overloading of templates. (6)
- c. Can we use a macro instead of a class template? Justify your answer. (4)
- Q.7** a. Mention four Condition Flags to monitor the route of a stream. (4)
- b. Mention the name of manipulators for each of the following.
(i) Insert newline and flush the output stream
(ii) Flush the output stream
(iii) Set fill character for output
(iv) Clear specified flags (4)
- c. Using file stream functions, write a program to read input integers from key board and write it to file in binary format. Display the contents in text format. (8)
- Q.8** a. Explain the working of exception handling. (4)
- b. Explain various types of exception handling specifications. (6)
- c. Write a program to illustrate multiple catch statements. (6)
- Q.9** a. Explain the features of *this* pointer. Give an example. (2+3)
- b. Define virtual functions and pure virtual functions. Give examples for illustration. (6)
- c. With the help of examples, differentiate between break and continue. (5)