ROLL NO. _____

Code: AC11/AT22 Subject: OBJECT ORIENTED PROGRAMMING

AMIETE – CS/IT (OLD SCHEME)

Time: 3 Hours **JUNE 2012** **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)**

a. '*Function prototype*' does not include this part of the function:

(A) Function name **(B)** Parameter list
(C) Function body **(D)** Return type

b. Which is not the property of the data member of a class:

(A) Data members may be static or non static
(B) Data members are initialized by using a constructor
(C) Data members are declared in namespace scope
(D) Static data members can be initialized explicitly in the class body

c. In Object Oriented Programming, *dynamic binding* is supported through _____

(A) Virtual functions **(B)** Static functions
(C) Friend functions **(D)** Dynamic functions

d. The program that handles directives is referred to as

(A) A Constructor **(B)** A Preprocessor
(C) A Destructor **(D)** A Pointer

e. A _____ function acts as a bridge between various classes and has access to all private and protected members.

(A) meta **(B)** super
(C) friend **(D)** all of the above

f. _____ of classes refers to the use of one or more classes within the definition of another class.

(A) Composition **(B)** Union
(C) Relation **(D)** Array

g. Identify the correct form of defining an explicit specialization of template from the following statements:
(i) PCC max< PCC >(PCC , PCC) {……..}
(ii) template<> PCC max< PCC > {……..}
(iii) template<> PCC max< PCC >(PCC t1, PCC t2) { ……}

(A) (i) only **(B)** (ii) only
(C) (iii) only **(D)** (i) & (ii)

h. The violations of function's exception specification can be detected at

(A) Only at run-time **(B)** only at compile-time
(C) Declaration-time **(D)** both at compile and run-times

i. When creating an object of a derived class, a program first calls the _____ constructor and then calls the _____constructor.

(A) derived-class, base-class **(B)** base-class, abstract-class
(C) base-class, friend-class **(D)** base-class, derived-class

j. The iostream manipulator setw() is used to _____

(A) input the data
(B) prevent the overflow of an input array
(C) output file
(D) abstract the data from the input file

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

Q.2 a. Write a program to illustrate a friend function. **(4)**

b. Explain briefly the following:
(i) Object-oriented programming language
(ii) Function prototyping
(iii) Pointer to class member
(iv) Static class members **(12)**

Q.3 a. Mention features of inline function and explain how it is different from macro. Write a program to illustrate inline function. **(10)**

b. Write a program to illustrate various types of constructors. **(6)**

Q.4 a. Explain the concept of operator overloading. Write a program that concatenate two strings using concept of operator overloading. **(10)**

b. Write a program to illustrate multiple inheritance concept in object oriented programming. **(6)**

Q.5 a. Suppose a base class and a derived class both define a method with the same name and a derived-class object invokes the method. Which method is called? In what order are class constructors and class destructors called when a derived-class object is created and deleted? **(6)**

b. When do we make a class virtual? Explain with an example. Write a programme to illustrate the concept. **(10)**

Q.6 a. Create a class Grade with data members as char Name [30], int Reg_No, char grade and member functions Read() and Write(). Create an array of objects for Grade class of size ten. Write a program to read values for ten objects of Grade class and write to data file GRD.dat. Also display the contents of the file. **(7)**

b. Explain the features of the following condition flags for file streams:
(i) eof()
(ii) bad()
(iii) fail()
(iv) good() **(6)**

c. Mention features of exception specification. **(3)**

Q.7 a. Write a program to illustrate handling of derived class exceptions. **(6)**

b. Write a programme using function temple to display the smaller of the two numbers which may be integers or floating decimal points or characters. **(6)**

c. Write short notes on explicit template arguments. **(4)**

Q.8 a. Differentiate between static binding and dynamic binding. Give suitable example. **(6)**

b. Explain how unary and binary operators are implemented using member and friend function. **(6)**

c. Explain the features of Nested classes and Local classes. **(4)**

Q.9 a. What do you mean by static variable and static function? **(4)**

b. Write short notes for any **THREE** of the following:
(i) Inheritance modes
(ii) This pointer
(iii) User-Defined conversions
(iv) String streams **(3×4)**