

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 |

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- 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

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

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- 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)

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- 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)