

**Advanced Diploma in Information Technology (ADIT) /
Bachelor in Information Technology (BIT)**

Term-End Examination

December, 2007

CST-102 : COMPUTING : AN OBJECT ORIENTED APPROACH

Time : 2 Hours

Maximum Marks : 50

Note : *There are two Sections A and B in this paper. All the questions in Section A are **compulsory**. Questions number 1 to 10 carry one mark each. Questions number 11 to 14 carry 4 marks each. Answer any **two** questions from Section B. Each question of Section B carries 12 marks. Use C++ wherever necessary.*

SECTION A

1. When a language has the capability to produce new data types it is said to be 1
 - (a) Encapsulated
 - (b) Overloaded
 - (c) Extensible
 - (d) None of the above

2. The function 'main' can have 1
 - (a) 2 arguments
 - (b) no arguments
 - (c) at most one argument
 - (d) None of the above

3. Command line arguments argc argv stands for 1
 - (a) array character, array variable
 - (b) array counter, array vector
 - (c) argument counter, argument variable
 - (d) None of the above

4. The loop while (condition); executes for 1
- (a) ∞ times
 - (b) one time
 - (c) error
 - (d) None of the above
5. In C++ typecasting is done by syntax 1
- (a) typename (expression)
 - (b) (typename) expression
 - (c) none
 - (d) both
6. The symbols for scope resolution operator, conditional operator, class member access operator are 1
- (a) ::, ?, (*or.)
 - (b) ?:, ::, (.or.*)
 - (c) ., :?, ::
 - (d) *, :?, ::
7. Operators used to format data display are 1
- (a) Manipulators
 - (b) Constructor
 - (c) Destructor
 - (d) None of the above
8. Entire array can be passed as an argument of a function by passing 1
- (a) base address of array
 - (b) name of array
 - (c) None of the above
 - (d) Both (a) and (b) are same and any one can serve the purpose
9. Pure virtual function is a virtual function 1
- (a) with nobody and is used in base class
 - (b) that returns nothing
 - (c) that takes no data
 - (d) None of the above
10. Copy constructor is invoked when 1
- (a) function returns by value and an argument is passed by value
 - (b) function returns by reference
 - (c) argument is passed by reference
 - (d) None of the above

11. Write a program in C++ to print following output. The program should be interactive i.e. following output is generated for the number entered by user. If user enter 4 then output is

4

```
1
2 2
3 3 3
4 4 4 4
```

12. Write short notes on any *two* with example :

2+2=4

- (a) Friend function
- (b) This pointer
- (c) Multiple Inheritance

13. Differentiate between any *two* among the following. Give at least two differences.

2+2=4

- (a) Virtual function and Pure Virtual function
- (b) Constructor and Destructor
- (c) Inline function and Friend function

14. What are preprocessors ? Briefly discuss any two preprocessors with syntax and give an example for each.

1+3=4

SECTION B

Answer any *two* of the following questions. Each question carries 12 marks.

15. Write an interactive program in C++ that takes input sentence from user and produces an analysis report that describes number of vowels, number of consonants, number of white spaces and finally produces the output in proper format. Coding should be accompanied with respective flow chart, algorithm and comments. 12
16. Write a program that takes input from the user interactively and produces a matrix of size $m \times n$ (again provided by user). The program should display upper triangular matrix and the entered matrix on providing input 'UP'. Similarly on providing input 'DN' the program should display lower triangular matrix and the entered matrix. 12
17. An electricity board charges the following rates to discourage large consumption of energy : 12
- For first 100 units — Rs. 4/unit
For next 200 units — Rs. 5/unit
Beyond 300 units — Rs. 6/unit
- All users are charged a minimum of Rs. 500. If total cost is more than Rs. 2,500 then additional surcharge of 15% is added. Write a program in C++ that reads name of the users and units consumed and produces the charges applicable with the entry of user name.