Code: AC11/AT22 **Subject: OBJECT ORIENTED PROGRAMMING**
Time: 3 Hours **Max. Marks: 100**

JUNE 2011

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. Which one of the following C operators is right associative?

(A) = **(B)** ->
(C) ^ **(D)** []

b. Which one of the following will read a character from the keyboard and will store it in the variable c?

(A) c = getc(); **(B)** getc(&c);
(C) c=getchar(); **(D)** getchar(&c);

c. Which members of a base class are inherited by a subclass?

(A) All the public and private members
(B) All the protected and private members
(C) All the public and protected members
(D) None of the above

d. In C++, a function contained within a class is called

(A) a member function **(B)** an operation
(C) a class function **(D)** a method

e. Overloading a postfix increment operator by means of a member function takes

(A) no argument **(B)** one argument
(C) two argument **(D)** three argument

f. What is the difference between a declaration and a definition of a variable?

(A) Both can occur multiple times but declaration must occur first
(B) A definition occurs once, but a declaration may occur many times
(C) A declaration occurs once, but a definition may occur many times
(D) Both can occur multiple times but definition must occur first

g. #define MAX_NUM 15
Referring to the sample above, what is MAX_NUM?

(A) MAX_NUM is an integer variable
(B) MAX_NUM is a precompiler constant
(C) MAX_NUM is a preprocessor macro
(D) MAX_NUM is an integer constant

h. What would be the output for the following program?

```
int main( )
{
int x, y=10,z=10;
x=(y==z);
cout<<x;
return 0; }
```

(A) 0 **(B)** 1
(C) 10 **(D)** Error

i. An exception is caused by

(A) a hardware problem **(B)** a problem in the operating system
(C) a syntax error **(D)** a run time error

j. Which one of the following variable names is NOT valid?

(A) go_cart **(B)** go4it
(C) 4season **(D)** _what

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

Q.2 a. Distinguish between procedure-oriented programming and Object-oriented Programming. **(8)**

b. What is the main advantage of passing arguments by reference? Explain this with an example. **(4)**

c. What does **this** pointer point to? Explain. **(4)**

Q.3 a. Write a program to overload the unary minus operator using friend function. **(6)**

b. Explain what do you understand by containership? How does it differ from Inheritance? **(6)**

c. Why do we need constructors? **(4)**

Q.4 a. Distinguish between overloaded functions and function templates. Give example. **(8)**

b. How does an inline function differ from a pre-processor macro? Explain wit an example. (

c. Why is it necessary to overload an operator? **(3)**

Q.5 a. Describe the following with examples:
(i) Abstract Class
(ii) Virtual Functions
(iii) Compile-time polymorphism **(10)**

b. How is polymorphism achieved at run time? Explain with coding. **(6)**

Q.6 a. How is a class converted into another class? Explain with example. **(8)**

b. Write a program which asks for a file name from the keyboard, opens a file with that name for output, reads a line from the keyboard character by character and writes the line onto the file. **(8)**

Q.7 a. Write a template function that swaps the values of two arguments passed to it. In main(), use the function with characters and integers. **(6)**

b. When do we use multi-catch handlers? Explain with an example. **(6)**

c. Differentiate between late and early binding. **(4)**

Q.8 a. What is multiple inheritance? Write a program that explains how to pass parameters to the constructors of base classes in multiple inheritance. **(8)**

b. Define a class **Date** with three variables for **day, month** and **year**.
(i) Write the default and parameterized constructors.
(ii) Overload the operators <<, >> to read and print Date object.
(iii) Overload > to compare two dates. **(8)**

Q.9 Consider a publishing company that markets both book and audio cassette version to its works.
(i) Create a class publication that stores the title (a string) and price(type float) of a publication.
(ii) Derive the following two classes from the above publication class; book which adds a *pagecount*(int) and tape which adds a *playing time* in minutes(float).
(iii) Each class should have get_data() function to get its data from the user at the keyboard.
(iv) Write a main() function to test the book and tape classes by creating instances of these, asking the user to fill in data with get_data() and then displaying it using put_data(); **(2+6+4+4)**