

Roll No. ....

## BCA-102(N)

### B. C. A. (First Semester) EXAMINATION, Dec., 2012

(New Course)

Paper Second

#### PROGRAMMING PRINCIPLE AND ALGORITHM

Time : Three Hours ]

[ Maximum Marks : 75

Note : Section A is compulsory. Attempt any *eight* questions from Section B and *one* question from Section C.

Section - A

15

(Numerical/Analytical/Problematic Questions)

1. (a) Give the output at each step of the following program :

```
# include <stdio.h>

void man ()
{
    int i, j, k, x = 0 ;
    for ( i = 0 ; i < 5 ; + + i )
        for ( j = 0 ; j < i ; + + j )
            {
                switch ( i + j - 1 )
            }
}
```

Case - 1 :

Case 0 :

X = X + 1 ;

break ;

Case 1 :

Case 2 :

Case 3 :

X = X + 2

default

X = X + 3 ;

}

Printf ( "% d", X);

}

Printf ("\n = P = % d" , X );

}

- (b) Draw a flow chart to find the roots of quadratic equation  $ax^2 + bx + c = 0$ .
- (c) What is the output of the following :

```
Void main ()
```

```
{
```

```
    int a = 0, b = 0;
```

```
        a = (b = 75) + 9
```

```
Printf ( "%d"%d, a, b);
```

- (d) Distinguish between variables and keywords with examples.
- (e) What is the time complexity and Big-Oh notation ?

### Section - B

6 each

#### (Short Answer Type Questions)

- 2 What is the difference between a character constant and a string constant ? Does string constant represent numerical value ?

3. Explain the general syntax of a switch statement and with example explain its use in programming.
4. Write a C program to read ten integers from keyboard and print the sum of even and odd numbers.
5. Write down the flowchart of nested IF statement in C.
6. What is the effect of absence of BREAK in switch statement ? Explain with example.
7. Generate the pattern of digits :

1 2 3 4 5

1 2 3 4

1 2 3

1 2

1 2 3

1 2 3 4

1 2 3 4 5

8. How is call by value method of function calling different from call by reference method ? Give suitable example to support your answer.
9. Write a program to find the sum of digits in a given integer number n using function.
10. Explain the significance of the following control specification :  
%C %d %f %e  
%O %X %h %U
11. Define Pre-processor. Construct a macro to swap two numbers.

12. Write Pseudo-code for finding the sum, average and product of three given numbers a, b and c

## Section – C

12 each

## (Long Answer Type Questions)

13. (a) What is the concept of problem solving ? Explain different problem solving techniques.  
 (b) Write different storage class with example in C.  
 (c) Write a program in C to sum the series :

$$X + X^2 + X^3 + \dots X^n$$

14. (a) Write a program that will read the value of X and evaluate the following function :

$$Y = \begin{cases} 1 & \text{for } X > 0 \\ 0 & \text{for } X = 0 \\ -1 & \text{for } X < 0 \end{cases}$$

Using :

- (i) nested if statement  
 (ii) else if statement  
 (iii) conditional operator
- (b) Distinguish between the following :
- (i) Actual and formal parameter  
 (ii) Global and local variable  
 (iii) Automatic and static variable