Question Bank for PG Course
অঙ্ক (Mathematics)
চতুর্থ (খ) পত্র (Paper - IVB)
Computer Programming & Its Application To Numerical Analysis : PGMT-IVB

1. Assuming i is an integer variable, which of the following C expression/s is/are equivalent to $(i + = 1)$.
    i) $i++$
    ii) $++i$

2. Find below an expression in C where a, b, c and d are integer variables.
    $$-a-b+-c-+d$$
    Supply Parentheses to show how the compiler would interpret the above expression based on the precedence and associativity of the arithmetic operators.

3. Suppose that we call a scanf as follows:
    scanf("%[a-z' ']", sub);
    where sub is a character array of size 40. If user enters the string:
    mathematical programming
    then what is the content of the array variable sub?

4. The main block of two different C-programs are given below.

Program-1 (main)
int sum = 0, x ;
for (x = 0 ; x <= 100 ; x++)
{
sum = sum + x ;
}
printf ("%d" , sum) ;

Program-2 (main)
int sum = 0, x ;
for (x = 0 ; x <= 100 ;)
{
sum = sum + x ;
x++ ;
}
printf ("%d" , sum) ;

    Determine whether the above two programs are legal and produce same output or not.

5. A two-dimensional integer array m is declared as follows:

Int m[3][4]={ {1,2,-1} ,
{2,3,4,5}} ;
Find out the value of m[0][3] and m[2][0].

6. What are the different types of storage classes defined in C language?

7. Find below a main block of a C program:

```
Program - ( main )
inti, j;
for(i=1; i<= 3; i++)
for(j = 1; j <= 4; j++)
printf("%d\t%d\n", i, j);
```

If we want to rewrite the above program using goto statement instead of using "for"loop, then write down the main block of the program.

8. What is void pointer?

9. **If i is a variable and p points to i then which of the following expressions have the same value as .i ?**

i) $*p$ ii) $*\&p$ iii) $*i$

iv) $*\&i$ v) $\& p$ vi) $\&*p$

10. Find below a function print_rev which takes a positive integer n and displays all the integers starting from n up to 1 in decreasing order:

void print_rev(int n)

{

inti ;

for(i = n ; i> 0 ; i--)

printf("%d\n", i) ;

}

Implement the same function using recursion instead of loop?

11. Suppose that x is a one-dimensional array and p is a pointer variable. Assuming that the assignment $p = x$ has just been performed. Based on the above information determine which of the following expressions are true/false?

i) $p == x[0]$

ii) $p == \&x[0]$

iii) $*p == x[0]$

12.   What is the value of the string *str1* after following statements have been executed?

```
Strcpy( str1, "Linear" ) ;
Strcpy( str2, "Algebra") ;
if( strcmp ( str1, str2) <0 )
strcat( str1, str2 );
    else
strcat ( str1, str2 );
```

13.   Evaluate the following postfix expression:

| 5 | 3 | + | 2 | * | 6 | 9 | 7 | - | / | - |

14.   Which of the following statements are true?

i) $5n + 3 = O(n^2)$ **[big-oh notation]**

ii) $5n + 3 = O(n)$ **[big-oh notation]**

iii) $5n + 3 = o(n)$ **[little-oh notation]**

iv) $5n + 3 = \theta(n^2)$ **[θ notation]**

15.   Which data structure is mainly used for insertion and deletion of data at the same end?