



**ENGINEERING & MANAGEMENT EXAMINATIONS, DECEMBER - 2006**  
**INTRODUCTION TO COMPUTING ( COMPUTER PROGRAMMING WITH C )**  
**( SEMESTER - 1 )**

Time : 3 Hours ]

[ Full Marks : 70

**GROUP - A****( Multiple Choice Questions )**1. Choose the correct alternatives for the following : 10 × 1 = 10

i) Find out the output of following program segment :

```
main ()
{
    int a, b, c ;
    b = 2 ;
    a = 2 * ( b + + ) ;
    c = 2 * ( + + b ) ;
}
```

- a) a = 4, c = 6                      b) a = 3, c = 8  
c) a = 3, c = 6                      d) a = 4, c = 8.

ii) In the following statement  
printf ( fpt, " %d ", i ), the variable fpt is

- a) a character variable                      b) a pointer to a file  
c) a file variable                              d) arbitrarily assigned value.

iii) How many times will the loop be executed ?

```
C1 = 'a' ;
while ( C1 >= 'a' && C1 <= 'z' )
    .C1 ++ ;
```

- a) 25    b) 26  
c) 0    d) 1.



- iv) If an array is used as a function argument, the array is passed
- by value
  - by reference
  - array cannot be used as function argument
  - call by name.
- v) If integer needs 2 bytes storage, then maximum value of an unsigned integer is
- $2^{16} - 1$
  - $2^{15} - 1$
  - $2^{16}$
  - $2^{15}$ .
- vi) Which of the following operators takes only integer operands ?
- +
  - \*
  - /
  - %.
- vii) Assume that  $x = 50$ . Then what is the value of  $y$  where  $y = x == x++ ; ?$
- 0
  - 1
  - 51
  50.
- viii) Register variables have the default value
- garbage
  - 0
  - 1
  - NULL.
- ix) The function  $\text{func}(n) = 1 + 2 + 3 + \dots + n$  can be recursively written as
- $\text{func}(n) = \text{func}(1) + \text{func}(2) + \dots + \text{func}(n)$
  - $\text{func}(n) = n + \text{func}(n - 1)$ , when  $n > 1$   
 $= 1$ , when  $n = 1$
  - $\text{func}(n) = \text{func}(n - 1) + \text{func}(n - 2)$ , when  $n > 1$   
 $= 1$ , when  $n = 1$
  - $\text{func}(n) = \text{func}(n - 1) + 1$ , when  $n > 1$   
 $= 1$ , when  $n = 1$
- x) If a two-dimensional array  $\text{int } a[10][20]$  is represented as an array of pointers, then the element  $a[4][5]$  can be denoted as
- $*(a + 4) + 5$
  - $*a[4] + 5$
  - $*(*(a + 4) + 5)$
  - $*(a[4] + 5)$ .

**GROUP - B****( Short Answer Questions )**Answer any *three* questions.

3 × 5 = 15

2. Define symbolic constant. During compilation process, what happens to symbolic constants that appear within C program ? Explain with an example. 2 + 3
3. a) What is function overhead ? Explain with an example. 3  
b) Differentiate between recursion and iteration. 2
4. a) Is it possible to pass a portion of an array to a function ? Illustrate with an example. 2  
b) What is the difference between 'x' and "x" ? 2  
c) How is a two-dimensional array represented in memory ? 1
5. How can the indirection operation ( \* ) be used to access multidimensional array element ? What are the differences between structure and union ? 2 + 3

**GROUP - C****( Long Answer Questions )**Answer any *three* questions.

3 × 15 = 45

6. a) The equation  $x^2 + y^2 = r^2$  represents a circle which centres at origin and radius is  $r$ . Write a program that read  $r$  from the keyboard and print the number of points with integer co-ordinate that lie on the circumference of the circle. 5  
b) Write a program to print Pascal's triangle of the form : 6

```

      1
     1 1
    1 2 1
   1 3 3 1

```

.....  
 .....

- c) Write a program to find the transpose of a matrix. 4
7. a) What are the disadvantages of an array ? 3  
b) Write a program to insert an element ( given by the user ) into an array in a particular position ( given by the user ). 6  
c) Write two functions to implement the library functions using pointers — `strcat ( )` and `strrev ( )`. 3 + 3



8. a) Explain the meaning of the following declarations :
- i) `float (* p) [ 25 ] ;`
  - ii) `int (* p) ( char * a ) ;` 2
- b) Differentiate between call by value and call by reference. 5
- c) Define a structure called 'employee', to store information about an employee ( e-no, e-name, basic-pay, DA, HRA and gross-pay ). Write a program to input the e-no, e-name and basic-pay of several employees. The program will calculate the DA ( 65% of basic ), HRA ( 15% of basic ) and gross pay ( Basic + DA + HRA ) of all employees. Also display the details of the employee having the highest salary. 8
9. a) What do you mean by operator precedence and associativity ? 4
- b) Write a program in C to find the roots of a quadratic equation. Your program should print the imaginary roots in the form  $a + ib$ . 6
- c) Write a program in C to find the LCM of two integers. 5
-