Prasanti Vihar, Pubasasan,
Bhubaneswar-751 002,
Phone No.-+91-674-2465129/701
Fax-(0674) 2465701

**First Semester Examination – Dec.2004**
**Programming in C**

**Full marks – 70** **Time : - 3hours**

Answer Question No. 1 which is compulsory and any five from the rest.
The figures in the right-hand margin indicate marks

1. Answer the following questions: (2x10

(a) What C-compiler does with the following statements?
```
#include<stdlib.h>
```

(b) How many storage bytes are required for a variable of the following types?
int
float

(c) Consider the following C program.
```
#include<stdio.h>
void main()
{
        int x=5;
        printf("x1=%d,x2=%d,x3=%d",x++,x++,x++);
}
```
What output the above program will print?

(d) Assume that both x and y are declared as integer variables. What will be the value of x and y in the following printf statements?
```
x=10;
y=++x;
printf("x=%d  y=%d\n",x,y);
```

(e) What will be the output when the following C program is executed? Ignore thetypographic mistake(s), if any.
```
int main()
{
        int i,j;
        i=0;j=400;
        while(i<j)
                - - j;++i;
        printf("%d",i-j);
}
```

(f) Determine the output when the following C program is executed. Ignore the typographic mistake(s), if any.
```
#include<stdio.h>
int x=10,y=20;
void main()
```

Prasanti Vihar, Pubasasan,
Bhubaneswar-751 002,
Phone No.-+91-674-2465129/701
Fax-(0674) 2465701

```
{
        incr(x, &y);
        printf("x=%d,y=%d",x,y);
}
void incr(int a, int*p)
{
        int x=0;
        a=a +1;
        *p= *p+1;
        printf("a = %d,x = %d",a,x);
}
```

(g) What will be the output when the following C program is executed? Ignore the typographic mistake(s), if any.

```
main()
{
        int i=5;int j=6;
        int p;
        p=child(child(++i,j++),child(++j,i++));
        printf("p=%d",p);
}
int child(int a, int b)
{
        return (a*b);
}
```

(h) Suppose, an array a[100] is declared as an array of integers. It is required to pass the array as a call by value. How it is possible?

(i) Suppose, x is a variable of the type Date, which is defined below. What will be the storage space in bytes is required to store a value for it.

```
typedef struct Date {
        int dd : 5;
        int mm : 4;
        int yy : 7;
};
```

(j) Mention what the following function (defined in <string.h> will return for two non-empty strings s1 and s2? n is a variable of integer type.

```
        strncmp(s1,s2,n);
```

Prasanti Vihar, Pubasasan,
Bhubaneswar-751 002,
Phone No.-+91-674-2465129/701
Fax-(0674) 2465701

2.

(a) What are the two branch statements for making a decision in C? Give the syntax of the two. (2 + 2

(b) Using the two branch statements you have mentioned, write two C program to solve the following program. (3+3

Read a mark x between $0 \leq x \leq 100$
Print 'A' if $80 \leq x$
Print 'B' if $60 \leq x < 80$
Print 'C' if $40 \leq x < 60$
Print 'D' if $30 \leq x < 40$
Print 'F' otherwise.

3.

(a) What are the uses of malloc() and calloc() functions in C? In which header file these two functions are defined? (2+1

(b) What is the full syntax of the above two functions? (1+1

(c) Give an example (in C code) of any one of the above functions to allocate memory for a 2D integer matrix with m rows and n columns.(5

4. A palindrome is a string which reads the same forwards and backwards. For example, MADAM, MALAYALAM are two palindrome words. Given a string of characters write the following in C.

(a) int palindromeTest(char *strinz) to check whether the strinz is a palindrome or not. If strinz is a palindrome then it returns 1 else 0. (5

(b) int pallinMerge (char *s1, char *s2) to test if merging of two strings is a palindrome or not. Returns 1 if so otherwise 0. (5

5. You have given an array A[100]. You are to find the largest element in the array A. Write functions for the same using (4+6

(a) iterative method

(b) recursive method

6. It is required to test for three input values a, b, c whether they form a triangle or not and if they form a triangle, then what kind of triangle it is. Following information may be adopted for the above functionalities: (2+8

Triangle : Three values are the sides of a triangle if sum of any two values is greater than the other.
Isosceles triangle : If the two sides are equal

Prasanti Vihar, Pubasasan,
Bhubaneswar-751 002,
Phone No.-+91-674-2465129/701
Fax-(0674) 2465701

Equilateral triangle : If three sides are equal

Right-angled triangle :If the sum of the squares of two values equals to the square of the other.

To solve the above trigonometric problem, you are to write four functions. Write the prototype of the functions and define them.

7.

(a) What are the different ways of accessing a file is known? (3

(b) What kind of file access(es) is/are possible with C-programming? (2

(c) What are the different modes that a file in C can be handled. (5

8. Consider the following record for a student: (4+6

Name: Character string(30)

Roll No.: Character string
(Example : 99IT214)

Subject Code: integer

Marks: Float

Give the answer(following the C syntax only) for the following.

(a) What will be the structure for the above record suitable for storing them into a linked list?
(b) How a number of records can be read from the keyboard and then can be stored them into a linked list?

---x---