Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/MCA/SEM-1/MCA-103/2009-10

2009
COMPUTER PROGRAMMING WITH *C*

Time Allotted : 3 Hours   Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words
as far as practicable.

GROUP – A
(Multiple Choice Type Questions)

1.   Choose the correct alternatives for the following :   10 × 1 = 10

    i)   Output of the following code is

        #define N 2+3

        main ( )

        {

            int a;

            a=N*N;

            printf("%d",a);

        }

        a)   25   b)   13

        c)   0   d)   none of these.

11418   [Turn over

ii) Output of the following code is

```
main ( )
{
        int a [ ] = { 0, 1, 2, 3, 4 }
        int k, *p;
        for (p=a, k=0, p+k<=a+4; p++, k++)
        printf("%d", *(p+k));
}
```

a) 0 1 2 3 4   b) 0 2 4

c) compiler error   d) none of these.

iii) Output of the following code is

```
main ( )
{
        int a[2] [3] = { 1, 2, 3,
                           4, 5, 6
                                };
        printf ("%d", *(*a+1)+2) );
}
```

a) 6   b) 2

c) compiler error   d) none of these.

iv) Output of the following code is

```
#include<string.h>
main ( )
{
        int k=strcmp("abc", "Abc");
        printf("%d", k);
}
```

a) 0   b) 65

c) – 65   d) none of these.

v) Output of the following code is

```
#include<string.h>
main ( )
{
        char s[ ] = "hello";
        printf("%d", *(s+strlen(s));
}
```

a)   0   b)   5

c)   compiler error   d)   none of these.

vi) Output of the following code is

```
#include<string.h>
main ( )
{
        char ch[5];
        int j;
        for (j=0; j<5; j++)
        ch[j]=65;
        ch[j]='\0';
        printf("%s", ch);
}
```

a)   AAAA   b)   AAAAA

c)   compiler Error   d)   none of these.

vii) A typecast is used to

a)   define a new data type

b)   force a variable to be of a particular type

c)   rename an old type

d)   none of these.

viii) When applied to a variable, what does the unary "&" operator yield ?

a)   the variable's address

b)   the variable's right value

c)   the variable's binary form

d)   the variable's value.

ix)   What will print when the sample code is executed ?

void main ( )

{

int z, x=5, y=–10, a=4, b=2;

z=x++ – – –y * b / a;
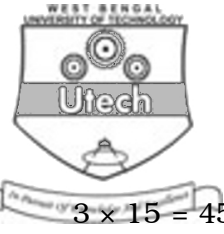
printf("%d", z);

}

a)   5   b)   6

c)   10   d)   11.

x)   Consider the following declaration :

char const *p = 'd';

Which of the following is not a permissible operation ?

a) *p++

b)   ++p

c)   (*p)++

d)   all.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following.　　　3 × 5 = 15

2. What are the basic data types used in *C* language ? What are the user defined data types ? Explain briefly.

3. Write a *C* program to print —

                1

            1   0   1

        1   0   1   0   1

    1   0   1   0   1   0   1

4. What are the left shift and right shift operators ? Give some examples which implement those operators. What is a macro ?　　　4 + 1

5. Write a *C* program which passes a string "This is a test" in command line and print those arguments one by one and also print the number of arguments.

6. Compare the use of the *switch* statement with the use of the nested *if-else* statement. Which is more convenient and why ?

GROUP – C
(Long Answer Type Questions)
Answer any *three* of the following.   3 × 15 = 45

7. a) Write a *C* program to print the prime numbers between 1 to 100.

    b) Why "&" is used in case of scanf ( ) statement in *C*, while it is not used in printf( ) statement ?

    c) Write a *C* program to accept three integer numbers as the length of three sides of a triangle, test the validity of lengths and classify the triangle.   6 + 3 + 6

8. a) What is function ? Explain with an example.

    b) What are the differences between malloc ( ) and calloc ( ) functions.

    c) What is *C* preprocessor ? What is its use ?

    d) What are the command line arguments ?

    e) What is the difference between arrays within a structure and the array of structure ?   5 × 3

9. a) What is a self-referential structure ? How can an individual structure member be accessed in terms of its corresponding pointer variable ?

b) What is the relationship between an array name and pointer ? What is the difference between array of pointers and pointer to an array ?

c) Write a *C* program to find the *greatest common divisor* (GCD) of two non-negative integer values.

(3 + 2) + (3 + 4) + 3

10. a) What is the purpose of main function ? What are the difference between void type and other data type used in function definition ?

b) What do you mean by scope of variable ? Explain briefly the scope of different types of variables.

c) Write a *C* program that will search the *k*th element in a list of *n* integers. (3 + 2) + 5 + 5

11. Write short notes on any *three* of the following : 3 × 5

a) Dynamic memory allocation

b) Enumerated data types

c) Break and continue statements

d) Precedence and Associativity.