Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/MCA/SEM-1/MCA-103/2011-12
2011
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 :

$10 \times 1 = 10$

    i)   The output of the following code is

```
#include<stdio.h>
main()
{
    int x, y = 2;
    x = y<<1;
    printf ("%d", x );
}
```

       a)   1   b)   2

       c)   3   d)   4.

ii) The output of the following code is

```
#include<stdio.h>
main()
{
    int a = − 6, b = 2;
    if (a/b)
        printf ("True");
    else
        printf ("False");
}
```

a) True b)   False

c) Compilation error   d) none of these.

iii) The output of the following code is

```
#include<stdio.h>
main()
{
    int x = 3, y = 3, z = 3;
    z − = − x -- - -- y;
    printf ("x=%d, y=%d, z=%d", x, y, z);
}
```

a) *x=2, y=2, z=8*   b) *x=2, y=2, z=–5*

c) *x=2, y=2, z=5*   d) none of these.

iv) $a[i][j]$ is equivalent to

a) $*(*a(+i)+j)$ b) $*(a+i)+j$

c) $\&(*(a+i)+j)$ d) $\&(a+i)+j$.

v) Which one is the correct alternative of the following C declaration ?

int * (* (* ptr) (int)) (char);

a) ptr is a pointer to a pointer to a function taking int and char and returning pointer to int

b) ptr is a pointer to a function, taking an int returning a pointer to function taking a char, returning a pointer to int

c) ptr is a pointer to a pointer to a pointer to int and char

d) none of these.

vi) What is printed when the following program is compiled and executed ?

```
int func(int x)
{
    if(x<=0)
        return(1);
    return func(x—1)+x;
}
main()
{
    printf("%d\n",func(5));
}
```

a) 12   b) 16

c) 15   d) 11.

vii) The declaration of float *a[5] is

   a)   a normal pointer

   b)   an ordinary array

   c)   an array of pointer

   d)   a pointer to an array.

viii) Which is not a storage class ?

   a)   Auto   b)   Struct

   c)   Typedef   d)   Static.

ix) The library function exit() causes an exit from

   a)   the loop in which it occurs

   b)   the block in which it occurs

   c)   the function in which it occurs

   d)   the program in which it occurs.

x) Which of the following is the correct order of evaluation for the following expression ?

$$z = x + y * z \ / \ 4 \ \% \ 2 - 1$$

   a)   * / % + − =

   b)   = * / % + −

   c)   / * % − + =

   d)   * % / − + =

GROUP – B

(Short Answer Type Questions)

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

2. What do you mean by operator precedence and associative ? Explain with an example. What is conditional operator ?

             2 + 2 + 1

3. a) What is pointer to a function ? Give an example.   2

    b) Write the form of the fopen() function. What are the various modes used for processing the data in files ?   3

4. Write a C-program to convert binary number to equivalent decimal number.

5. What is the difference between structure and class ? What is a self-referential structure ?   3 + 2

6. What is the difference between array of pointer and pointer to an array in respect of multidimensional array ? What is structure pointer ?   3 + 2
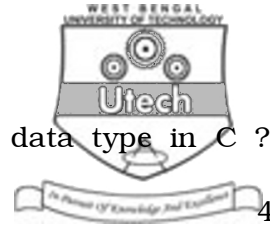
GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.   3 × 15 = 45

7. a) Explain the Tower of Hanoi problem. Write a C-program to implement the Tower of Hanoi problem using recursion.   3 + 3

    b) What do you mean by explicit and implicit type conversions in C ? Explain with example.   2 + 2

    c) What is meant by the scope of a variable within a program ? What is the purpose of external variable ? What is its scope ?   3 + 1 + 1

8. a) What do you mean by enumerated data type in C ? Explain with an example. 4

b) Compare and contrast between structure and union in C. 5

c) What do you mean by dynamic memory allocation ? Critically compare between malloc() and calloc() functions. 2 + 4

9. a) Write a program in C to generate Pascal's triangle up to specified number of rows. 7

b) Write a C-program to implement binary searching. 6

c) What is a self-referential structure ? 2

10. a) Write a program to find GCD and LCM of two non-negative integer values. 6

b) Write a program to accept a number and find sum of its individual digits repeatedly till the result is a single digit. 5

c) Explain the storage class in C. 4

11. a) What is the difference between two declarations ? 3

   Int *a[20];

   Int (*a)[21];

   b) Write a program in C-programming language to print the set string in dictionary order using array of pointer(2-D array implementation). The strings are initially stored in 2-dimensional array. 6

   c) What is dangling pointer and void pointer ? 3

   d) What is memory leakage ? 3

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