Name : ……………………………………………………………

Roll No. : ……………………………………………………………

Invigilator's Signature : ……………………………………….

CS/B.TECH(NEW)/SEM-2/CS-201/2013

2013

BASIC COMPUTATION AND PRINCIPLES OF COMPUTER PROGRAMMING

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 correct syntax to send an array "array" as a parameter to function "func" is

a)   func (& array) ;

b)   func (array) ;

c)   func (* array) ;

d)   1func (array [size]); .

2266   [Turn over

ii) What is the output of this C code ?

```
# include < stdio.h >
void main ( )
{
        double k = 0;
        for ( k = 0.0; k < 3.0; k ++ );
        printf ( "% f", k );
}
```

a) 2.000000

b) 4.000000

c) 3.000000

d) none of these.

iii) Number of bytes required to store a float variable is

a) 8 bytes

b) 4 bytes

c) 2 bytes

d) 6 bytes.

iv) The Hexadecimal equivalent of the number (101101010010)$_2$ is

a) A53

b) A52

c) B52

d) C62.

v)   The value of EOF is

   a)   – 1

   b)   0

   c)   1

   d)   10.

vi) Which of the following are themselves a collection of different data types ?

   a)   String

   b)   Structure

   c)   Char

   d)   All of these.

vii) A 64 bit microprocessor has word length equal to

   a)   1 byte

   b)   8 bytes

   c)   2 bytes

   d)   4 bytes.

viii) Which one of the following is a ternary conditional operator ?

   a)   & &

   b)   if

   c)   <=

   d)   ? .

    ix)   Obtain the 2's complement for '1001' in twice.

        a)   1000

        b)   1011

        c)   1001

        d)   1111.

    x)   Find out the output :

        main ( ) {

        int i = 1;

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

        a)   331

        b)   133

        c)   314

        d)   111.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2.   a)   Write a flowchart to find the sum of the first n prime numbers, where n should be given by the user.   3

    b)   What is logical operator ?   2

3.   Write a program in C to print the sum of the following series (upto n terms where n should be given by the user) :

$$1 + 2^2 / 2! + 3^3 / 3! + \ldots$$

4. Given two numbers write a program in C to find the HCF in recursive way.

5. a) What is type casting ? 2

   b) Indicate the difference between a structure and union.

   3

6. a) What are the advantages of 2's complement over 1's complement ? 1

   b) Perform the subtraction with the following binary numbers using 2's complement and 1's complement respectively : 2 + 2
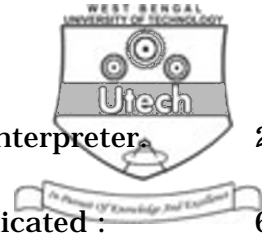
      i) 11010 – 1101

      ii) 10010 – 10011.

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

7. a) Input two strings and pass them to a user defined function to compare them. 7

   b) Write a program to input a $n \times n$ matrix and print the maximum element of the matrix. 8

8. a) Differentiate between Complier and Interpreter. 2

 b) Convert the following numbers as indicated : 6

  i) Decimal 225.225 to binary.

  ii) Binary 11010111.110 to octal.

  iii) Hexadecimal 2AC5.D to binary.

 c) Why is NAND gate called Universal gate ? Explain with example. 3

 d) What is bit-wise operator ? 4

9. What is a function ? What are the advantages of using functions ? What are the function prototypes ? Write a C program to find out the number of vowels in a string. Explain call by value and call by reference with example.

$$2 + 2 + 2 + 5 + 4$$

10. Write a C program to find the real roots of the quadratic equation using user define function quad ( ). What is array of pointers ? Explain with example. Why is a NOR gate called a universal gate ?

 Simplify $(A + \bar{B}) . (A . C) + (A . \bar{B} + \bar{A} . C). (\overline{A + B})$

$$6 + 4 + 2 + 3$$

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

      i)   Relational Operators

      ii)   Array of Pointers

      iii)   Macro

      iv)   Dynamic Memory Allocation

      v)   XOR gate.

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