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]); .

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) :

$1 + 2^2 / 2! + 3^3 / 3! + ...$

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

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.