

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) lfunc (array [size]) ; .

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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.

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- 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) ? .

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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) :

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

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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. $3 \times 15 = 45$

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

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8. a) Differentiate between Compiler 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 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 $(A + \bar{B}) \cdot (A \cdot C) + (A \cdot \bar{B} + \bar{A} \cdot C) \cdot (\bar{A} + \bar{B})$

6 + 4 + 2 + 3

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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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