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 :

                                                             10x1 = 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.   3x 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. $3 \times 15 = 45$

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

                                                    6+4+2+3

11. Write short notes on any three of the following :   3 x5

     i)   Relational Operators

     ii)   Array of Pointers

     iii)   Macro

     iv)   Dynamic Memory Allocation

     v)   XOR gate.