BCA(I) — COM/ I /
5 / X / H

2010

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group – A

(Objective Type Questions)

Answer **all** questions.

1. Choose the correct answer of the followings :

$$2×10 = 20$$

   (a) Consider the following variable declaration :

   Union x {

          int i ;

          float f ;

(Turn over)

```
          char c ;
        } y ;
```

if the size of i, f and c are 2 bytes, 4 bytes and 1 byte respectively then the size of the variable y is :

(i)   1 byte

(ii)   2 bytes

(iii) 4 bytes

(iv) 7 bytes

(b) Pick up the odd one out from the following :

(i)   x = x – 1

(ii)   x – = 1

(iii) x – –

(iv) x = – 1

(c) Suppose i, j, k are integer variables with values 1, 2, 3 respectively. What is the value of the following expression ?
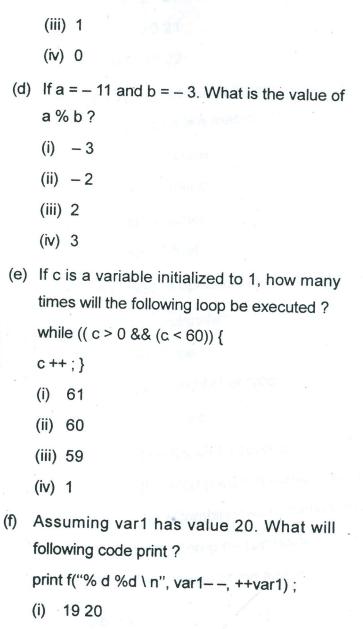
! ((j + k) > (i + 5))

(i)   6

(ii)   5

(iii) 1

(iv) 0

(d) If a = -11 and b = -3. What is the value of a % b ?

(i) -3

(ii) -2

(iii) 2

(iv) 3

(e) If c is a variable initialized to 1, how many times will the following loop be executed ?

```
while (( c > 0 && (c < 60)) {
c ++ ; }
```

(i) 61

(ii) 60

(iii) 59

(iv) 1

(f) Assuming var1 has value 20. What will following code print ?

```
print f("% d %d \ n", var1– –, ++var1) ;
```

(i) 19 20

(ii) 21 21

(iii) 20 21

(iv) 19 22

(g) Which of the following directive creates functions like macros ?

(i)   # include

(ii) # define

(iii) # undef

(iv) # ifdef

(h) Size of operator returns the size in bytes of :

(i)   Indentifier

(ii) Type

(iii) Identifier or type

(iv) Array

(i) The && and || operators :

(i)   Compare two numeric values

(ii) Combine two numeric values

(iii) Compare two boolean values

(iv) None of the above

(j) Enumeration is :

   (i) A list of strings

   (ii) A set of numbers

   (iii) A set of legal values possible

   (iv) None of the above

Group – B

(Long-answer Type Questions)

Answer any **four** questions : 15×4 = 60

2. Develop a flowchart and then write a C program to display all prime numbers less than the number entered by the user.

3. With the help of suitable examples, explain the difference between struct and union.

4. The sequence of Fibonacci numbers is defined as below :

   $f(i) = f(i - 1) + f(i - 2)$ with $f(0) = 1$ and $f(1) = 1$

   Draw a flowchart and then develop a 'C' program to calculate and display Fibonacci numbers.

5. Explain the difference between paramete passing mechanism "call by value" and "call by reference". Which is more efficient and why ?

6. Write an algorithm and then develop a program to evaluate the roots of a quadratic equation. Define and use a function cal_roots"() to calculate the roots such that roots are also available in calling function i.e. use pointers.

7. Explain the difference between an array, structure and an enumerated data type.

8. Write short notes on any **three** of the following :

   (a) Switch statement (give proper syntax and examples)

   (b) What do you mean by Loop ? How while-loop and do-loop differs ?

   (c) What is C preprocessor ? Explain any two C preprocessor commands with example.

   (d) Break and Continue Statements

9. Draw a flowchart and then write a C program to enter the roll number and marks of any four subjects of few students from the keyboard and write to a "student.dat" file.

10. Write algorithm and also a C function print_upper() to prints its character array argument in uppercase without using string.h header file.

———————— ✳ ————————