Nepal College of Information Technology

Balkumari, Lalitpur, Nepal

Level: Bachelor   Semester - Fall   **Year:** 2010
Programme: BE   **Full Marks:** 100
Course: Programming in C   **Time:** 3 hrs

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions

1. **a.** Differentiate between analog computer and a digital computer, and with the help of a neat, labeled block diagram explain different parts of a digital computer.   8
   b. Explain the various generations of computer with their characteristic features.   7

2. **a.** Explain the various looping structures used in C programming with their syntaxes and examples   7
   b. What is a recursive function? Write a program to find the factorial of a number, input by user, using a recursive function.   2+6

3. **a.** Write a program to take N random numbers as input from the user and print them in descending order.   7
   b. What will be the output of the following program?   8

```c
#include<stdio.h>
#include<conio.h>
void main()
{
    int i,j,k=50;
    for(i=1;i<=5;++i)
    {
        for(j=i;j<=5;++j)
        {
            if(i<j)
                k++;
            else
                k--;
        }++i;
    }
    printf("%d",k);
    getch();
}
```

4. **a.** Differentiate between structure and union with example.   5
   b. NCIT needs a way to store the following information of students enrolled at NCIT, Write a program to input data of 200 students and display records of those students with first name starting from A and last name starting form B   10

First Name	Last Name	Address	Phone Number	Date of Birth		
				dd	mm	yy

5. **a.** When passing an argument to a function, what is the difference between passing by value and passing by reference? Discuss with syntax and example.
   b. Write a program to swap values between two variables using a function making use of pointers.   7

6. **a.** Write a menu driven program to do the following tasks.   15
   - Find sum of first n natural numbers
   - Generate a Fibonacci series up to nth element
   - Print complete multiplication table of number n
   - Exit

   The program should repeat itself until the user chooses to exit. Make use of switch statements and functions.

7. **a.** Write a program to take two matrices of size 3x4 and 4x5 from the user, then find the product and print the product matrix.   7
   b. Write an algorithm to print all prime numbers between 10 and 1000.   8

8. Write short notes on: (Any two)   5 X 2
   a. Comments
   b. Dynamic Memory Allocation
   c. Data types
   d. Storage class in C