Program	:	BE ELX/IT/CE	Time	:	3 hrs
Semester	:	Fall (I)	FM	:	100
Subject	:	Programming in C	PM	:	50

- ✓ *Candidates are requested to give their answer as far as practicable in their own words.*
- ✓ *The figure in the margin indicates the full marks*
- ✓ *Attempt ALL question*

1 a. Draw the labeled block diagram of a digital computer. Explain each unit briefly. 8

   b. What do you mean by syntax and semantics of a program? Explain with example. 4

   c. What is user defined (derived) data type? List different basic data types in C. 3

2 a. Explain with examples the Decision Control mechanisms and loop control mechanisms available in C? 7

   b. what will be the output after the execution of the following code. Implement the following program in while and do-while loop. 4+2+2

```
#include<stdio.h>
int main ()
{
    int i;
    for ( i=1 ;  ; i--)
    {
            printf( " %d " , i--);
            i=i+5;
            if(i>20)
                    break;
            else
                        continue;
    }
    return 0;
}
```

3 a. Describe function prototype, function definition and function call with suitable example. 7

   b. What is the Difference between call by value and Call by Reference? Write a function that returns both area and perimeter of a rectangle using Call by Reference and show its call from main() function. (Area=length X breadth and perimeter=2(length + breadth)). 8

4 a. Write a program to input m X n order square matrix (m=n) and find the sum of both of the diagonal elements. (Note: when m=n=odd number, center element is added twice.) 8

   b. What is the difference between Array of pointers and pointer to array? Illustrate with suitable examples.

   OR

   Write a recursive function to add square of first n natural numbers. $(1^2+2^2+3^2+…..+n^2)$ 7

5 a. How dynamic memory allocation can be achieved? Explain with suitable example. What are the advantages of dynamic memory allocation? 8

   b. Write a program to read a string from the user and print changing the upper case alphabets to lower case and vice versa. 7

6 a. How structure differs from union? When would you use a nested structure? 5

   b. What are the File opening modes? Create a structure for the following data.

				Date of Joining		

   Write program to input 100 employees, save in emp.dat file and display the record of those employees who live in address "Pokhara". 10

7. Write short notes on: (5 x 2)
   a. Storage class
   b. string related functions
   c. Pointer Arithmetic
   d. macro vs. function