02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2074 Ashwin

Exam.	Back		
Level	BE	Full Marks	80
Programme	All (Except B. Arch.)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. What are computer programs and computer programming? Explain the steps that are required to build a computer program for solving a certain problem. [2+6]

2. Explain with an example the role that precedence and associativity play in the execution of an expression. Rewrite the following program by correcting any errors, if present and also write down the output of the corrected code. [4+4]

```
Define MAX '5'
int main ( )
{
  int case[MAX]={2,3,5,4,10},i,sum=0;
  for(i=0,i<MAX,i+=1)
  {
    printf("Case %d = %3.2d\n",i,case[i]);
    sum +=* case+i;
  };
  average = sum/MAX;
  printf("%06.2f",average);
  return 1;
}
```

3. a) Compare if-else-if ladder and switch construct with example and flowchart. [5]

   b) Write a program in C to generate following pattern using unformatted input/output functions only. [5]

```
      N
    e e e
  P P P P P
a a a a a a a
L L L L L L L L L
```

4. Write a program in C to find out whether the nth term of the Fibonacci series is a prime number or not. Read the value of n from the user and display the result in the main function. Use separate user-defined functions to generate the nth Fibonacci term and to check whether a number is prime or not. [8]

5. a) How two dimensional arrays are created in C programming? Write a program to read square matrix of size N×N and find sum of both diagonals. [2+4]

   b) Write a program in C to check whether a given string is palindrome or not using user defined function. [4]

6. What are the advantages of using pointer in C programming? Write a program in C to find second largest elements from an array containing N elements using concept of pointer. [2+4]

7. Explain structures and nested structures? Create a structure to hold any complex number x+iy. Write a program that uses the structure to read two complex numbers and display a third complex number which is the multiplication of the entered complex numbers. [3+5]

8. a) What are different input/output functions used with data files in C? Explain with syntax and examples. [4]

   b) Write a program in C to read integers from user until user says "no". After reading the data write all the odd numbers to a file name odd.txt and all the even number to file named even.txt. [4]

9. When can we use recursive functions? Why do we need control statements in computer programs? Differentiate between do...while and for statements. [2+2+2]

10. What are the characteristics of FORTRAN Programming? Write a program in FORTRAN to calculate the value of π by evaluating the following formula for the first 25 terms. [8]

$$\pi = 4\left(1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \cdots\right)$$

***

05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2073 Shrawan

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	ALL (Except B. Arch)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What do you mean by Programming Language? Explain about the evolution of programming languages. [1+3]

   b) What are the advantages of a Flowchart design? Write down the guidelines to be followed to draw a flowchart. [2+2]

2. a) What is the purpose of the semicolon that appears at the end of most assignment statement in C? Explain the program compilation, linking and loading process with example. [2+4]

   b) Discuss the types of errors in programming. How do you debug a C-program? [2+4]

3. a) Explain relational and logical operators. [4]

   b) Write a C program to display following pattern without using formatted input/output statements.

```
Programming
rogrammin
ogrammi
gramm
ram
a
```

4. a) Why do we need control statements? Compare switch and if-else-if ladder with example. [4]

   b) Write a C program to display all characters between a given ranges. [6]

5. a) What are the advantages of using functions? Differentiate between Library functions and User-defined functions with suitable example. [5]

   b) Write a program to check whether a given number is Armstrong number or not using recursive function. [5]

6. a) Write a C program to read two strings in main and compare them using userdefined function. Display appropriate message from main. [4]

   b) What are overflow and underflow errors in context of array? Write a program to add corresponding elements of two arrays. The results should form a new array. [2+4]

7. a) Why should we prefer structure over array? Explain nested structure with example. [2+4]

   b) Write a program to read name and roll number of 48 students from user and store them in file. If the file already contains data, your program should add new data at the end of the file. [6]

8. a) What is the structure of FORTRAN program? [5]

   b) Write a FORTRAN program to read n numbers and display largest number among them. [5]

***

02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2073 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	All (Except B.Arch.)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. Explain the generations of programming language. Distinguish between High level and Low level programming language. [3+3]
2. What is an algorithm and how it differs from pseudo-code? Develop algorithm and draw flowchart to find the largest of N numbers. [2+3+3]
3. a) What are identifiers? List the rules to define valid C identifiers. [2+3]
   b) What is operator? Describe the conditional operator in C with syntax and example. [2+3]
4. What are the differences between global and local function, variables and data types, & (Ampersand) operator and * operators used in c-programming language? Explain with example. [4+4]
5. a) Differentiate between pass by value and pass by reference. [3]
   b) Explain the significance of user defined functions with example. [5]
6. a) Write a program to read a string and check whether it consists of Alphabet or not. Use user defined function to accomplish the task. [5]
   b) Explain how 2D array is passed to a function. Write a C program to display largest and smallest elements of a 2D array. [5]
7. What is nested structure? Write a program in C to read name, age and salary of 10 different employees as the three members of a structure named as "employee". Sort this data in salary basis using user defined function and display sorted data from main function. [2+8]
8. Write a program in C-programming language to compute the cosine series. (hints: $\cos(x) = 1-x^2/2!+x^4/4!-x^6/6!+$.....up to n terms) [6]
9. Write a program to open file named INVENTORY and store in it for maximum 10000 data of ITEM_NAME, NUMBER, PRICE, QUANTITY. Extend the program to read this data from the above given filename and display the inventory table with the value of each item. [6]
10. a) Compare unconditional goto and computed goto in FORTRAN with syntax. [3]
    b) Write a program in FORTRAN to read an array containing N elements, sort this data in ascending order and display the result. [5]

***

05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2072 Kartik

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	All (Except B.Arch)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. a) Explain different generation of programming languages. [4]
   b) Why do we need analysis and design before coding a program? [4]
2. a) What do you mean by precedence and associativity of an operator? Explain with suitable example. [3]
   b) What are the differences between formatted and unformatted Input / Output. Give suitable example with sample output for the following: %10i, %3c, %-10.3f and %x. [1+4]
3. a) What are the purpose of the continue statement? Within which control statements can continue statement be included? Compare with the break statement. [1+2+2]
   b) Write a program to find the sum of series $Sn = \sum 1/n^2$ up to N term. [5]
4. What is the meaning of function prototyping? Write a program to calculate the sum of the series 1+11+111+.....+up to N terms using recursive function. If N is read as 5, the series is: 1+11+111+1111+11111. [2+6]
5. a) Explain with an example for compile time initialization of 2D array. Describe how compilier manages according to the number of initializers and size of an array given by a user in case of 1D array. [2+3]
   b) Write a program to read a word from a main function, pass it into a function that will convert all of its characters into upper case if the first character is in lower case and into lower case if the first character is in upper case. Display the converted string from main function. [5]
6. a) Explain need of structures. How can we create and use a structure within another. [2+3]
   b) Explain dot and arrow operators for accessing the members of a structure. [3]
7. a) If Ptr is a pointer to user defined type or basic type, by how many bytes is Ptr incremented when the statement Ptr++ is executed? [2]
   b) Write a C program that calls reverse array () to reverse the array and return the array and display the element of reversed array using pointer. [6]
8. List different types of standard I/O used in C. Write a program to write name, roll no and age of five students into a disk file name "STUDENT.DAT". [2+6]
9. a) Explain different types of goto statements in FORTRAN programming with suitable example. Write a program to read n from user and display the sum of following series till n^{th} terms: 1+(1+2)+(1+2+3)+(1+2+3+4)+.....n [4+4]
   b) Explain with suitable example to show how an Impiled Do loop works in FORTRAN. [4]

***

01 / 10

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2072 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	ALL (Except B. Arch)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. a) What is a flow chart? Use the various commonly used flow chart symbols. How does a flow chart help computer programming? [2+2+2]

   b) What is a program? Briefly describe types of computer software. [2+2]

2. a) What is an operator, datatype, constant and variable? Define. [6]

   b) Define and write syntax of the following: [4]
   i) gets()
   ii) putchar()
   iii) scanf()
   iv) strlen()

3. a) How is the switch statement used in decision making? Explain with a suitable example. [4]

   b) Write a program to check whether a given integer is a triangular number or not. [6]

   (Any number is a triangular number if the sum of natural number from 1 to any number i is exactly equal to that number. For e.g 1,3,6,10,15 etc are triangular number as, 1+2=3, 1+2+3=6, 1+2+3+4=10, 1+2+3+4+5=15)

4. a) Briefly explain the passing by value and passing by reference in function with example. [6]

   b) Write a program to calculate sum of digits of a given 5-digits number entered by the user using recursive function. [4]

5. What is a string? Write a program to read a 3*3 square matrix, find minimum integer value of a matrix, replace the diagonal elements by the minimum element and display it using pointer. [2+8]

6. a) What is the principal difference between a structure and an array? [2]

   b) Write a program to read structure "college" having name, estDate and location where estDate is an another structure having day, month and year as members. Display the records of 10 colleges. [8]

7. a) What is a data file in C? What are the modes in file handling? Explain briefly. [1+3]

   b) Write a program to read the information of a file named "data.txt" and write its contents to another file "record.txt". [6]

8. a) Compare DO and implied DO statement in FORTRAN. [3]

   b) Write a FORTRAN program to add and subtract two matrices and display the results in matrix form. [7]

***

05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2071 Shawan

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	All (Except B.Arch)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. a) Categorise programming languages on the basic of their uses and applications. Among them which programming language is C programming? [4]

   b) List and define different steps to solve the problem in computer system. [4]

2. a) Differentiate between declaration and definition. Explain structure of C program with an appropriate example. [4]

   b) Write syntax, example and use of following: [1×4]

   i) pintf( )
   ii) scanf( )
   iii) getche( )
   iv) getch( )

3. Write the difference between do and do..... while loop and write the program "to find whether a year is leap or not'. [3+7]

4. What is recursive function? How does it work? Find out sum of digit of number until the number becomes one digit number.[891>18>9]. [2+2+4]

5. a) Write a program to read a string and rewrite its characters in alphabetical order. [4]

   b) A multinational company has hired 3 sales persons for marketing/selling its 3 different products in Kathmandu. Each sales person sells each of these products. Write a program to read number of each product sold by all sales-persons. Calculate total sells of each item and the total sells of each sales-person. Use arrays. [6]

6. a) Explain about "Arrays within structures" along with programming example. [4]

   b) Write the program "to understand how structure members are sent to a function". [4]

7. Write down advantages of pointer. Write a program using pointer to swap the value of two variables where the swapping operation is performed in separate function. [2+6]

8. Write a C program to store employee details in a text file. Read data from the text file, sort them in ascending order of salary and store the sorted record to a binary file. Display the details and rank of employee given by the user. [8]

9. a) What do you mean by formatted and unformatted input/output statements in Fortran and also give suitable example which explain the concept of Formatted I/O. [8]

   b) Write the program to convert a binary number to a decimal number using Fortran programming language. [4]

***

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2071 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	All (Except B. Arch)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. a) What is mean by compilation? What is mean by interpretation? How do these two processes differ? [4]

   b) Define programming language? What are the features of good computer program? [1+3]

2. a) What are preprocessor directives? Explain constants and variables. [2+2]

   b) Write syntax and example of following statements/functions: [1×4]
   i) printf
   ii) getch
   iii) scanf
   iv) long

3. What are control statements? Illustrate nested IF statement with its flowchart. Write a program to calculate the series: $1\times10+3\times20+6\times30+.....+\frac{N(N+1)}{2}\times10N$, where N is an integer term read from the keyboard. [2+2+6]

4. a) Write a program to display Armstrong numbers between the range entered by a user and also display their counts. You must use a function to check for Armstrong numbers and display them from main. [4]

   b) What do you mean by nested function and recursive function? Give an example of recursive function. [2+2]

5. a) Write a C program to read a string and display its reverse. Use user defined function to count number of characters in it and to reverse it. [4]

   b) Write an algorithm to insert a value in an array at a position given by user. [4]

6. a) What is a tag? Must a tag be included in a structure type definition? Must a tag be included in a structure variable declaration? Explain. [1+1+2]

   b) Write a C program that reads several different names and address using structure computer, rearrange the names into alphabetical order and write out alphabetical list. [4]

7. Illustrate with example that "Array is indirectly a pointer". Write program to calculate sum and average of integer numbers between M and N (where value of M and N are read from keyboard) using pointer. [4+4]

8. Write a program to continuously read name, age and salary of a worker and write it into a file until user confirms to end. Then read n from user and display the nth record in the file. Details of worker must be represented by a structure. [7]

9. a) Compare arithmetic and logical if statements in FORTRAN. [7]

   b) Write a FORTRAN program to display nature of roots of a quadratic equation. Calculate and display the roots, if they are real and equal. [8]

***

INSTITUTE OF ENGINEERING
Examination Control Division

2070 Ashad

Level	BE	Full Marks	80
Programme	All (Except B. Arch)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming (CT401)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. a) Define software. Explain its types. [3]
   b) What are the steps required to develop a computer program? Explain. [5]

2. a) What are relational operators and assignment operators? Explain with examples. [3]
   b) Rewrite the following program by correcting any syntactical errors, if present. Also show the output of the corrected code. [3+2]

```
#include <stdio.h>
int main ( )
{
    float root, int i = 1;
    do { sum = 2i – 1;
         print ("\t%d\n", sum);
         i *= 5/3;
    } while (sum <= 15)
    root = pow (i, 1/2);
    print ("\n%.3f", root);
    return void;
}
```

3. a) Write a program to read the number until - 1 is encountered. Also count the number of even number and odd numbers entered by the user. [6]
   b) Distinguish between break and continue statement with example. [4]

4. a) Explain how function is defined in C? Differentiate call by value and call by reference. [1+2]
   b) Write a program using a function that returns the largest number from an array of numbers that is passed to the function. [5]

5. a) How are one dimensional and two dimensional arrays created in C? Explain with examples. [2+2]
   b) Write a C program to read two matrices from user, add them and display the result in matrix form. [6]

6. What do you mean by nested structures? Give suitable example. Write a program to read the heights of two students and display the difference between their heights. Use feet and inches as members of a structure to define height. [2+6]

7. a) Compare array and pointer with example. [3]
   b) Write a program to read a string from user and use a user defined function to copy the content of the read string into another character array changing lower case letter to upper if any. Use pointer to process the string. [5]

8. Write a program to read the details of book authors and write it to a file, until the user confirms to end. Then read and display the nth record in the file, where n is read from the user. The data for authors must be represented by structures that contain name, nationally and number of books published. [8]

9. a) Explain the FORTRAN structure. What are data types in FORTRAN. [2+2]
   b) Write a program in FORTRAN to solve quadratic equation and display roots in proper format. [8]

***

07/01/12

05. TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2070 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	All (Except B. Arch)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What do you mean by software and explain about generation of programming languages. [4]

   b) Define the term "Flowchart". Discuss about different symbols used in Flowchart. [4]

2. a) Find out final value of a, b and c where following expressions are executed sequentially. [4]

```
int a = 2, b = 3, c;
a = (b++) + (++b) + a;
c = a > b ? a:b;
b = (a++) + (b--) +a;
c = c++*b--;
```

   b) What are the difference between formatted and unformatted I/O statements? Describe with proper example. [4]

3. a) Explain importance of break and default statements in switch statements. [3]

   b) Write a C program to display following pattern using unformatted output statements: [7]

```
P
Pu
PuL
PULC
PuLcH
PULCHO
puLcHoW
PULCHOWK
```

4. a) Define "function definition" and write the program to find the sum of two numbers using user-defined functions. [4]

   b) What do you mean by "call by value and call by reference" along with suitable example? [4]

5. Can we pass whole array element from function? Write a program to display only those students information which are passed. Use separate function to check the result of student. The information of students like Name, Roll No, Address and Marks are passed from main functions and pass to functions using array type arguments. [2+8]

6. a) Explain the use of typedef of keyboard in structures. [2]

b) Explain the need of nested structure. Write a C program to convert data in BS to data in AD using structure. Use the data difference of current data. [1+5]

7. a) A pointer variable is used to store address of some other variables, however, we need to specify datatype while declaring a pointer variable. Why? [3]

b) Briefly explain array of pointers. How are array and pointer related? Give example. [5]

8. a) Define opening and closing a file along with suitable examples. [4]

b) Write the program to display the records in sorted order sorting is performed in ascending order with respect to name using data files concept. [4]

9. a) Compare arithmetic and logical if statements in FORTRAN with suitable example. [4]

b) Write a FORTRAN program to read m*n matrix, transpose it and display both the matrices. [8]

***

15 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2069 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	All (Except B.Arch)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. What are the features of a good computer program? Explain the process involved in converting a program written in high level language to an executable program. [4+4]

2. a) Why do we include <stdio.h> in our program? Can we write a C program without using any header file? Justify your answer. [2+2]

   b) Give the output of the following program and justify your answer with reason. [4]

```
#include<stdio.h>
int main()
{
    int x=3,y=5,z=7;
    int a,b;
    a=x*2+y/5-z*y;
    b=++x*(y-3)/2-z++*y;
    printf("a=%d",a);
    printf("b=%d",b);
    return 0;
}
```

3. a) What is the importance of control structure in programming? Compare if - else - if ladder and switch construct. Which is better? [1+3]

   b) Write a C-program to generate following pattern using unformatted output function. [6]

```
k
ok
wok
hwok
chwok
lchwok
ulchwok
pulchowk
```

4. a) What is a function? Why is it necessary in programming? [1+2]

b) Write a program to find wheather a number is prime or not using function. The function should take the number as argument and return true or false to the main program. [5]

5. a) How can we pass two dimensional arrays from one function to another? Explain with example. [4]

b) Write a program in C to find the second largest number in an array of n numbers. Read the value of n and the elements of the array from the user. [6]

6. What is advantage of using structure? Create an array of structure named Employee with name and salary as structure member and the array of structure is passed to a function which sorts in ascending order on the basis of salary and display the sorted array from main. [2+6]

7. a) Explain call by reference. How are pointers used in call by reference? [2]

b) Using pointer concept, write a program to count the number of characters and the number of words in a line of text entered by the user. [6]

8. a) Differentiate between text file and binary file. [2]

b) Write a program to read integers from user until user says "no". After reading the data write all the odd numbers to a file named ODD and all the even number to file named EVEN. [6]

9. a) Differentiate "Logical if" with "Arthmetic if" in FORTRAN with suitable example. [6]

b) Compare "Computed goto" statement (FORTRAN) and "switch" (C language). Write a program to read a day number and display whether it is Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday using both concept. [6]

***

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2068 Baishakh

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	All (except B.Arch)	Pass Marks	32
Year / Part	I/I	Time	3

Subject: - Computer Programming

- Candidates are required to give their answers in their own words as far as practicable.
- *Attempt all questions.*
- *The figures in the margin indicate Full Marks.*
- *Assume suitable data if necessary.*

1. What is high level language? Write different types of high level programming languages with their examples. How compiler is different than assembler programming language? [1+4+3]

2. What is a pseudo code? How is it different from an algorithm? Draw the flowchart to solve the multiplication of two matrices. [1+2+5]

3. Write a hierarchy of operations of the following expression in computer programming C: !EOF || B_Salary + Daily_Allowance > 8000 && eligible_code == '11' || net_pay>10000. Write different fo input output used in For Tran programming language. [4+4]

4. Write a program in C to calculate the frequency (F) for different values of capacitances(C), for a certain electrical circuit with an inductance (L) and resistance (R). The damped natural frequency is given by $F = \sqrt{(1/LC) - (R^2/4C^2)}$. It is required to study the variation of this frequency with capacitance starting from 0.01 to 0.1 in steps of 0.01, and calculation should be done using user defined function. [8]

5. Write a syntax in C– programming with example of the following: "scanf", single statement "do....while", "strcpy", structures with arrays. [4×2]

6. What are the rules that govern the passing of arrays to user defined functions? Compare "user defined function" and "switch" in C- programming language. [3+5]

7. What are the importances of "Pointers" in C programming language? Write the output of the following program. [4+4]

```
# include<stdio.h>
# include<conio.h>
void main()
{   int k, int a[ ] = {1, 2, 3}; int*b[3]; int **c[3];
    int***d[3]; int****e[3]; int*****f[3];
    clrscr();
    for (k = 0;k<3; k++)
        {   b[k] = a + k; c[k] = b + k; d [k] = c + k;
            e [k] = d + k; f [k] = e + k;
        }
    for (k = 0;k<3; k++)
        {   printf ("%3d", *b[k];      printf ("%3d", **c[k];
            printf ("%3d", ***d[k];    printf ("%3d", ****e[k];
            printf ("%3d\n", *****f[k];
        }
}
```

8. Write a program to read name and age of 10 different students as the two members of a structure named "students". Display the name and corresponding age of the students sorted in an alphabetical order. [8]

9. What are the inputs and outputs functions used with data files? Explain, error handling process during reading and writing in a data files. [5+3]

10. Write a program in ForTran to test whether the accepted year is leap year, or not. (Hint: A year is leap year if the year is divisible by 4, but not by 100 or the year is divisible by 400) [8]

05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2068 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	All (Except B. Arch.)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming *(CT 401)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. a) How high level programming languages are similar to natural language? Describe. [3]
   b) Does Algorithm and Flowchart design makes programming faster and easier? Describe with strong supporting points. Also draw flowchart to check whether a number is Armstrong or not. [2+3]
2. a) What are unary operators in C? Why are they named so? [2]
   b) What are preprocessor directives in C? Why are they needed? [2]
   c) How formatted input/output can be performed in C? Explain with example. [4]
3. Differentiate between conditional operator and if-else statement. write a program in C that calculates the sum of digits entered by the user successively until the sum reduces to a single digit number. For example, 12345 => 1+2+3+4+5=15=>1+5=6. [2+6]
4. Write a program in C to read a string and display it in reverse order. Use user defined functions to count the number of characters in it and reverse it. [8]
5. Write down the significance of array in C. Write a program to multiply two 3×3 matrix. Two matrix are input from main ( ) function and pass to a user defined function with argument with array. The result is also displayed from main ( ) function. [2+6]
6. Why structure variable differs from array? Write a program to input name, post and salary of ten employees from main ( ) function and pass to structure type user defined function (arguments of this function should also a structure type). This function returns structure variable which keeps the record of only those employees whose salary is greater than 10,000. This modified record is also displayed from main ( ) function. [2+6]
7. Explain how pointers can be used in C. How can you access array elements using pointer. Write a C program that reeds a string from user and use a user defined function to copy the contents of the read string into another character array changing lower case letters to upper if any. Use pointer to process string. [1+1+6]
8. Write a program to input and save record like name, roll, address and obtained mark of 48 students in a binary file and search and display the record of a student whose obtained mark in highest. The information should be organized in a structure. [8]
9. Write a program in FORTAN, to check whether a positive integer entered from the keyboard is a palindrome or not. (Hints: A number is palindrome if its reverse is equal to the number itself). [8]
10. Write FORTRAN program to display greatest and smallest number form list ten elements. [8]

***

05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2067 Ashadh

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	All (Except B.Arch.)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming

- Candidates are required to give their answers in their own words as far as practicable.
- *Attempt All questions.*
- *The figures in the margin indicate Full Marks.*
- *Assume suitable data if necessary.*

1. What is high level language? What are the different types of high level languages? How computer programming language C is different from FORTRAN? [1+3+4]

2. Write an algorithm and flowchart of the distance between two points (x_1, y_1) and (x_2, y_2), governed by formula $D^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$. Where, x_1, x_2, y_1, y_2 are given by user, but should not be zero. [5+5]

3. Write a syntax used in C programming language for the followings: [2×5]

   a) scanf( ) b) while c) struct
   d) if...else e) static

4. What are the significant meanings of '&' and '*' established in C programming? How can you differentiate between 'called by value' and 'called by reference' with example in C programming? [4+6]

5. State with example, how switch ( ) function differs from user defined function in computer programming language C. [4]

6. Write a pseudocode to find the standard deviation of an array of values in C programming. The array elements are read from the terminal. Use user defined functions to calculate standard deviation and mean. Standard deviation of n value is given by [8]

$$SD = \sqrt{\frac{\sum_{i=1}^{n}(x_m - x_i)^2}{n}}$$

   Where x_m is the mean of the values.

7. Write a program in C programming language according to the output displayed below: (to open a file named RECORD.txt for the n number of data where Cost, Service Charge 5%, VAT 15%, and Total Cost must be calculated by program itself). [10]

   Output is:

Item Code	Description	Rate	Quantity	Cost
001CT	Computer	22,000.00	5	110,000.00
007M	Cell Phone	8,000.00	10	80,000.00
VAT 15%				
Service Charge 5%				
Total Cost				

Thank You!!! Visit Again

8. Rewrite program correctly and write output of the given program written in C programming language below: [8]

```
# include stdio.h
# include conio.h
# include string.h
void main( );
    {
     char ar1[11] = {'I','o','E',' ','P','U','L','C','H','O','W','K'};
     char ar2[15] = "IoE, Pulchowk";
     char ar3[11] = {{'I'},{'O'},{'E'},
     {' '},{'P'},{'U'},{'L'},{'C'},{'H'},{'O'},{'W'},{'K'};
     clrscsr( );
     {printf ("\nArray 1 = %c\n", ar1);
     printf ("\nArray 2 = %c\n", ar2);
     printf ("\nArray 1 = %c\n", ar3);
     return 0
     }
```

9. Describe the formatted input and output statement in FORTRAN programming language with it's syntax. [4]

10. Write a program in FORTRAN to evaluate the following series: [8]
series = $1/1^1 + 1/2^2 + 1/3^2 + \ldots\ldots\ldots + 1/n^2$

46. TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2067 Ashwin

Exam.	New Back (2066 Batch)		
Level	BE	Full Marks	80
Programme	All (Except B.Arch.)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Computer Programming

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. Differentiate interpreter and compiler. Briefly explain the steps followed for developing computer software. [2+3]
2. What is a data type? Explain the operators available in C along with their precedence and associativity. [1+4]
3. "You are given a task to develop a system to read at least 50 integer numbers and continue until the user enters NO. Your system must have capacity to calculate the sum and average of those numbers which are exactly divisible by 9 but not by 6 and lies in between 1 to 100 and display a suitable message if no such number is read". Write algorithm and flowchart to develop such system. [5+5]
4. How recursion is different from iteration? Write code in C to calculate the sum of following series up to n terms specified by the user where n is passed to the function that calculates the sum. Your program should have more than two functions. [1+7]

   (2*3/5) + (4*5/7) + (6*7/9) + ...
5. Describe the limitations of using getchar and scanf functions for reading strings. Write a complete program to insert a string into another string in the location specified by the user. Read the string in main function, pass them to another function along with inserting position and returns the resulting string. [2+8]
6. Explain the relation of array and pointer. What is meant by call by value and call by reference? Write a complete program that adds the corresponding elements of two matrices if the elements are positive, otherwise multiply the corresponding elements using the concept of passing array to the function and pointer. [2+3+5]
7. Define the structures in C programming? Explain nested structure with suitable example. Write a program using structure and passing the structure to the function that returns the result to convert the date (in format YY/MM/DD) in B.S. to A.D. [2+2+6]
8. Explain the I/O operations on file with suitable example and also state the typical error situations during I/O operations in file. How the contents in the file can be randomly accessed? [6+4]
9. What are FORTAN's constants, variables and library functions? Explain. Write a program in FORTAN to take a position and a number and insert this number on this position inside an array containing n elements. [4+8]

***