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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 n^{th} 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 n^{th} Fibonacci term and to check whether a number is prime or not. [8]

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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]

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

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