TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Chaitra

Exam.		Regular	
Level	BE	Full Marks	80
Programme	All except BAS & BAR	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. What are different types of computer software? What do you mean by high level and low level programming languages? A long with the block diagram explain the steps involved during compilation of a source code. [2+2+4]

2. Explain different types of error that usually appears during the programming. Define preprocessing directive and explain its type with example. Write the algorithm and draw the flowchart to find the reverse of given number. [2+2+4]

3. Why are formatted output important in C language? Write a program to print all the roots (Even imaginary roots) of quadratic equation. [3+5]

4. Explain the importance of a switch case statement. Compare switch-case with if-else ladder. Write a program to find sum of numbers from 1 to 100 which are exactly divisible by 5 and not by 3. [2+2+4]

5. How is function declared? Why is function prototype necessary? Write recursive function segment that returns the sum of numbers from 1 to n given by the user. [2+1+5]

6. How can you pass one dimensional array to function and what does name of an array in function call represents? Write a program to find the largest and smallest element of an array using a single function and display the result in calling function. [3+5]

7. Explain how a structure can be defined and structure variables can be declared in C. Write a program that reads name, roll numbers, program and marks obtained in five subjects by students until the user enters 'e' and display the student detail and total marks obtained by each student. [3+5]

8. What is pointer? Discuss its relationship with an array. Write a function program that behaves strcpy() function using pointer as arguement. [1+2+5]

9. Explain different modes in opening file. Write a program to read a string, write it into a file and display the content of a file into a screen. [4+4]

10. Explain different data types available in FORTRAN. Write a program in FORTRAN to check whether a number given by user is palindrome or not. [2+6]

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2075 Chaitra

Exam.		Regular/Back	
Level	BE	Full Marks	80
Programme	All (Except BAE)	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) What is computer programming and computer software? Explain about types of programming languages and software. [2+2]

   b) What do you mean by compiler? Explain in brief the steps involved during compilation process along with block diagram. [2+4]

2. a) What is expression? What kind of information is represented by expression? [2+2]

   b) What is the purpose of the putchar function? How is it used within a C program? Compare with the getchar function with example. [6]

3. a) Compare nested-if control structure with else-if ladder structure along with flowchart. [4]

   b) Write a program to read a number from user, count the number of even digits contained in it and display whether the resulting count is prime or not. [6]

4. a) Write a program to generate the following output. [6]

```
1 2 3 4 5 4 3 2 1
  1 2 3 4 3 2 1
    1 2 3 2 1
      1 2 1
        1
```

   b) What is a function? What type is the main () function? Explain actual parameter and formal parameter with example. [1+1+2]

5. a) Write a program to read one dimensional array of n elements, pass it to a function for processing so that, the program should display the largest and smallest element of an array from the main function. [6]

   b) How can we initialize 2D array of character data type during compilation? Illustrate with suitable example. [4]

6. a) What is a structure? Explain nested structure with an example. [1+2]

   b) Write a program to define a structure named Person with Name, address, salary as its member. Enter values for five persons. Pass the structure to a function which increases the salary by 15% each. Display the updated information in the main () function. [7]

7. a) Write the output of the following. [6]

| a | 10 | | b | | | c | |

address: 65510   address: 65550   address: 65580

```
int a=10.*b. **c;
b=&a;
c=&b;
printf("%d\t%d\n",b,*c);
printf("%d\t%d\n", c, **c);
printf("%d\t%d", *b+5, &c+2);
```

b) What do you mean by Generic pointer, Null pointer and File pointer? [4]

8. a) Explain the FORTRAN structure. What are data types in FORTRAN? [2+2]

b) Write a program to print the Fibonacci series until the term is less than 500. [6]

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Ashwin

Exam.		Back	
Level	BE	Full Marks	80
Programme	All (Except BAR and BAS)	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) Define a language processor. Explain the main types of language processor in detail. [2+3]

   b) List the basic step of problem solving using computer. Write an algorithm and draw a flowchart to find the sum of N natural number. [1+4]

2. a) Define formatted and unformatted I/O functions. Write the operations of following functions: [2+3]

   (i) getch()
   (ii) getche()
   (iii) getchar()

   b) What is an expression? Write a program to display the smallest number between three integers entered from user using conditional operator. [1+4]

3. a) Differentiate between while and Do-while looping statement with example. [4]

   b) Write a program to evaluate the following series up n term. Prompt the user to input value of n and x. $f(x) = 1 - x^2/2! + x^4/4! - x^6/6! + x^8/8!$ --------up to n terms. [6]

4. a) What are the different types of functions available in C? What do you mean by pass by reference and pass by value. [2+3]

   b) What are the similarities and difference between iteration and recursive function? Give suitable example. [5]

5. How do you initialize a 2D array? Explain with an example. Write a program to input two matrices of size m×n and p×q respectively. Pass these matrices to the function to calculate the product matrix. Display the product matrix in the main () function. [2+8]

6. a) What is a structure? When do we use structure? [2+2]

   b) Write a program using pointer to swap the value of two variable where the swapping operation is performed in separate function. [6]

7. a) Why are fgets(), fputs(), fgetc() and fputc() used? [4]

   b) Write a program to display the record in sorted order, sorting is performed in ascending order with respect to name using data files concept. [6]

8. a) Compare Logical IF and Arithmetic If statement in FORTRAN with example. [4]

   b) Write a FORTRAN program to sort 10 integers given from user and display the second largest integer. [6]
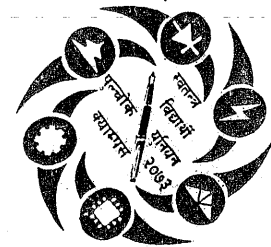
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Exam.		Regular	
Level	BE	Full Marks	80
Programme	All (Except B. Arch)	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

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 programming language? What is the difference between source code and object code. [2+2]

   b) What is debugging and testing? What are the step that need to be followed for developing the application software. [2+2]

2. a) What is the difference between variable declaration and variable definition? Explain with example. [4]

   b) What do you mean by macro expansion and file inclusion in C? Explain with example. [4]

3. What are functions used for formatted and unformatted output? Write down its syntax. Write down the output of printf() function for the following sections of statements. [4+4]

   float a = 5.7891;

   int b = 6789;
   printf("a=%4f and b=%-7d from first line", a,b);
   printf("a=%-7.2f and b=%07d from second line", a,b);
   printf("a=%.2f and b=%2d from third line", a,b);

4. a) Explain about while loop with its syntax and flowchat. [4]

   b) Write a program to convert a decimal number into binary number. [6]

5. a) Can a function return an array to the calling function? Explain with example. [4]

   b) Write a program to read a mxn matrix of integers and to find the largest elements of each row. Store the largest elements of the row in a one-dimensional array of m integers before displaying them. [6]

6. a) How does a structure differ from an array? What are the different ways to access structure member? [4]

   b) Create a structure named student that has name, roll and marks as members. Assume appropriate types and size of members. Use this structure to read and display records of 10 students. Crete two functions: One is to read information of students and other to display the information. [6]

7. a) Define following term: [5]

   i) int*p;
   ii) int p(char*a)
   iii) int(*p(char*a))
   iv) int *p(void)
   v) int*(*p[10])char a)

   b) Write the advantages of using pointer in C- programming. [3]

8. Write a program to copy to copy content of one file source.txt to another destination.txt. [8]

9. a) Explain the FORTRAN structure. What are different types on FORTAN? [2+3]

   b) Write a FORTRAN program to read N number to find second largest number among them. [5]

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2075 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. a) What is computer program? Discuss in brief about different generation of programming languages. [1+4]

   b) Why is algorithm and flow chart development important in problem solving? Write an algorithm and draw flow chart to test a number entered by user whether it is even or not. [2+3]

2. a) What is the identifier? What are the ways to give value to variable? Explain with example? [1+2+1]

   b) Explain about input and output function available in C with syntax and example of each part. [2+2+2]

3. a) Write algorithm, draw flow chart and program to input a number check it is Armstrong or not. [2+2+2]

   b) What do you mean by selective and repetive statement? Why do we need break and continue statement? [2+2]

4. a) What do you mean by "call by value and call by reference"? Explain it with suitable example. [4]

   b) Can we pass whole array element from the function? Write the program to pass an array to function and sort them. [6]

5. a) Write a program that finds the largest word in a given sentence. [4]

   b) Differentiate between the methods of passing argument to function with example. What are their advantages and disadvantages? [6]

6. What is structure? Why is it necessary? Write a program to add two distances given in feet and inch format using structure. [1+1+6]

7. a) What is null pointer? What will be the output of following program, explain. [1+3]

   ```
   #include<stdio.h>
   int main() {
       if( ! NULL )
           printf("C programming is easy");
       else
           printf("C programming is not easy");
       return 0 ;
   }
   ```

   b) Write a program to calculate the length of string without using string handling function. [4]

8. A file name employee.txt stores employee name, employee id and employee salary. Write a program to display the detail of all employees in the order of their salary. [8]

9. Write a program in FORTRAN to read 10 integers from user and short them in ascending order and display it in screen. [6]

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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
```

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]

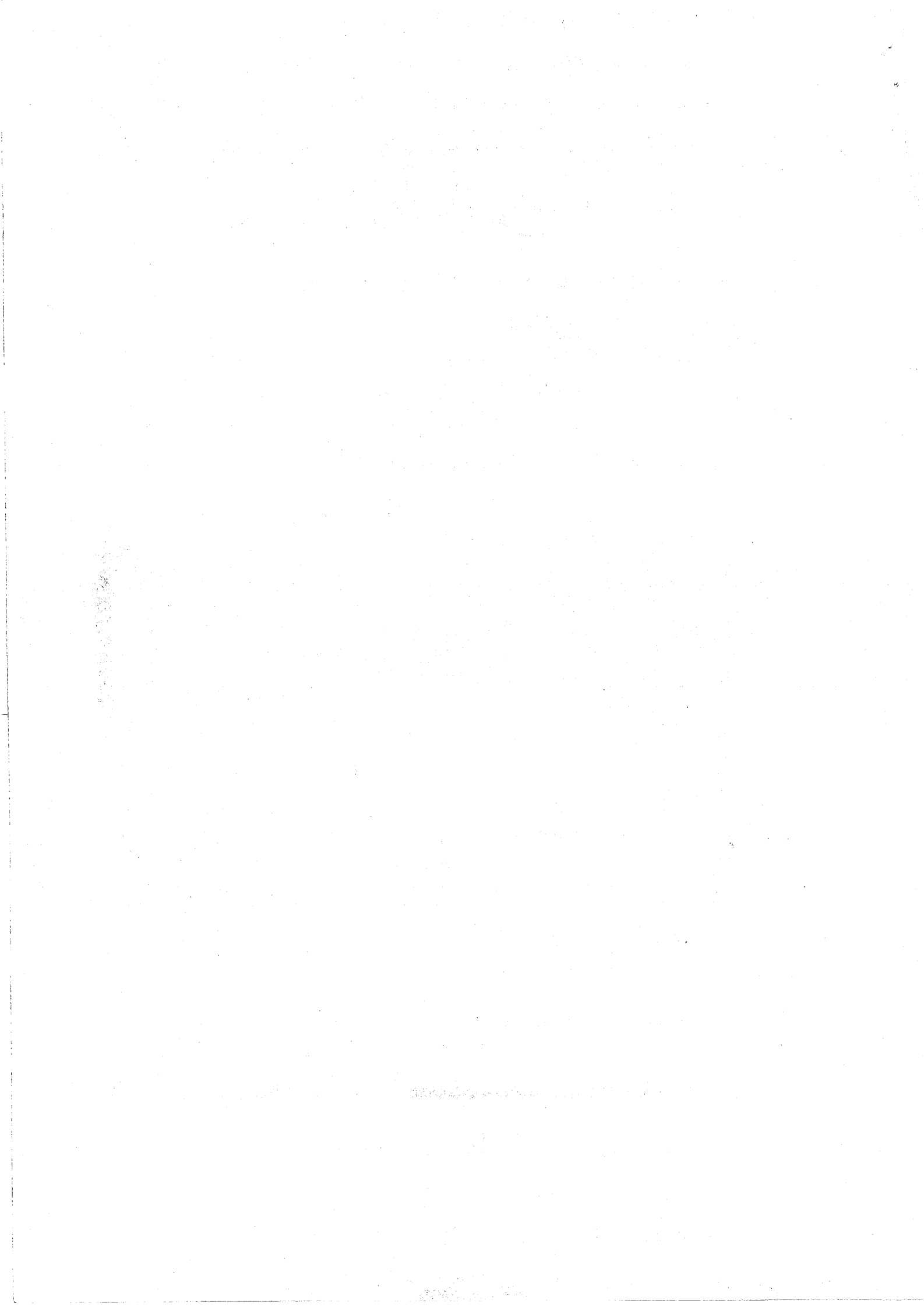$$\pi = 4\left(1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \dots\right)$$

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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: $\cos(x) = 1-x^2/2!+x^4/4!-x^6/6!+\ldots\ldots\ldots$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]

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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. [4]

   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]

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

05   TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2072 Chaitra

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]

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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 $1+11+111+\ldots\ldots+$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: $1+(1+2)+(1+2+3)+(1+2+3+4)+\ldots\ldots n$ [4+4]

   b) Explain with suitable example to show how an Impiled Do loop works in FORTRAN. [4]

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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.
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✓ 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: $1 \times 10 + 3 \times 20 + 6 \times 30 + ... + \dfrac{N(N+1)}{2} \times 10N$, 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]

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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]

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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]

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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]

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Exam.			
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]

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INSTITUTE OF ENGINEERING

Examination Control Division

2069 Chaitra

Exam.	Old Back (2065 & Earlier Batch)		
Level	BE	Full Marks	80
Programme	BEL, BEX, BCt	Pass Marks	32
Year / Part	II / I	Time	3 hrs.

Subject: - Computer Programming II (EG542CT)

✓ 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 different issues with procedural programming languages. Compare OOP with procedural programming language. Write a program that will represent time measurement with OOP approach. The program should be able to read time in correct format. [2+2+6]

2. Explain different types of literals used in C++. Write a program to check whether an integer number is a palindrome or not using object class concept. Remember to return enumerated true or false from the function where you check the number. [4+6]

3. What is a friend function? What are the merits and demerits of friend function? Write a program to add data members of objects of two different classes and store in the data member of the object of a third class. [2+2+6]

4. What do you mean by operator overloading? Write down the syntax for operator overloading for binary and unary operators with example. Write a program to add two matrices using operator overloading. [1+3+6]

5. Explain the need inheritance in programming? Explain various forms of inheritance. Write a program that will inherit a class whose members are increased by its member function. The derived class should override the function that increases its member in the derive class that will add increment of the derived class data member. [2+2+6]

6. Explain different types of manipulators available in C++? Compare the manipulators with the ios function with example. Write a program to overload stream operators to read and write the objects that represent date and time. [2+2+6]

7. Why do we need function template? Write down the syntax and use of function template. Write a program that will sort the elements of generic array using the function template. [2+2+6]

8. Explain the steps taken during exception handling? When is re-throwing of exception necessary, explain with example. Write a program that will handle exceptions for different cases. Make meaningful program that throws multiple exceptions. [2+2+6]

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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]

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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: IEOF || B_Salary + Daily_Allowance > 8000 && eligible_code == 1 || net_pay>10000. Write different formatted 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 1(P. Ir the year is divisible by 400)   [8]

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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.

    $(2*3/5) + (4*5/7) + (6*7/9) + \ldots\ldots$ [1+7]

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]

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