

2024

## INTRODUCTION TO PROGRAMMING

Full Marks : 100

Time : Three hours

*The figures in the margin indicate full marks for the questions.*

*Answer **any five** questions.*

1. a) State whether the following statements are true or false: (**any ten**): 1 x10=10
- (i) The break statement is used to exit from the program.
  - (ii) The == operator is used to check for inequality.
  - (iii) The \n sequence is used for a new line.
  - (iv) The values passed to the function at the time of calling are known as formal parameters.
  - (v) C keywords can be used as variable names.
  - (vi) Nested if statement is not allowed in C.
  - (vii) The modulo division operator % cannot be used on floating point data.
  - (viii) In switch statement, the default case is optional.
  - (ix) While statement executes its body only if the condition is false.
  - (x) In C language, an array starts from the position zero.
  - (xi) The process of a function calling itself is called as recursive function.
- b) Fill in the blanks (**any ten**): 1 x10=10
- (i) C is a general-purpose programming language created by \_\_\_\_\_ at the Bell Laboratories in 1972.
  - (ii) The standard mathematical functions are included in the \_\_\_\_\_ header file.
  - (iii) An immediate exit from the loop can be achieved by a \_\_\_\_\_ statement.
  - (iv) The format specifier for an integer in a printf statement in C is \_\_\_\_\_.
  - (v) The memory size of a floating point number is usually \_\_\_\_\_ bytes.
  - (vi) A named area in memory that stores a character or numeric value is called \_\_\_\_\_.
  - (vii) Every C program begins execution at the function \_\_\_\_\_.
  - (viii) The \_\_\_\_\_ standard library function is used to obtain data from the keyboard.
  - (ix) Array elements are stored in \_\_\_\_\_ memory locations.
  - (x) The operator && is an example of \_\_\_\_\_ operator.
  - (xi) The function \_\_\_\_\_ sets the position to a desired point in the file.

2. a) Convert the following: 2x5=10  
     i)  $134_{10}$  to binary ii.  $1011101100_2$  to octal  
     iii)  $407_8$  to hexadecimal iv.  $10000101_2$  to decimal  
     v)  $310_{10}$  to hexadecimal
- b) Draw the block diagram of a computer system and briefly explain each of the units. 10
3. a) Define a variable. Mention the rules for naming a variable. 1+3=4
- b) Write the difference between prefix and postfix operators with suitable examples. 6
- c) Write a C program to convert the temperature entered in Fahrenheit to Celsius. 10
4. a) Write a C program to check whether an input number is palindrome or not. 10
- b) Write a C program to search an element in an array to check whether it is present or not. If present, display the position. 10
5. a) Write the difference between: 4+4+2=10  
     i) Array and structure  
     ii) Compiler and interpreter  
     iii) `==` and `=` operators
- b) What is pointer in C? Explain the difference between function call by value and function call by reference with suitable examples. 10
6. a) What are the advantages of using functions? Write a function in C to check whether a number is prime or not. 2+8=10
- Or**  
 Write a C program to find the factorial of an input number using recursion.
- b) Month of the year will be entered in number. Write a C program to display the corresponding month name. For example, if 1 will be given as input your program should display January, if 2 then February and so on. Give an appropriate message when invalid month number is entered. 10
7. a) Create a structure called "Book" with members title, number of pages and price. Write a C program to input data for three books and display the information. 10
- b) Write short notes on the following (any two): 5x2=10  
     i) Computer languages. ii) Algorithm  
     iii) Basic file operations iv) Ternary Operator in C