I. Answer any ten questions. Each question carries two marks. \(10 \times 2 = 20\)

1. What is software? Mention the classification of software.
2. Mention the different datatypes supported in C language.
3. What is type casting? Give an example.
4. Mention the classification of I/O functions with example.
5. Explain the break and continue statements.
6. Give the advantages of function.
7. Explain the classification of arrays.
8. Mention any four string functions.
9. Give the difference between structure and union.
10. Explain any two memory related functions.
11. Mention different file opening modes.
12. What is preprocessor directive? Give an example.

SECTION – B

II. Answer any five questions. Each question carries ten marks. \(5 \times 10 = 50\)

13. a) Write the algorithm to find the sum of the series: \(1 + 2 + 3 + 4 + \ldots\) up to \(n\) terms.
   b) Explain the tokens of C language.
14. a) Explain the types of operators.
   b) Write a C program to demonstrate bitwise operators.
15) a) Write a C program to print the following format.
    1 2 3 4
    1 2 3 4

    b) What is control statement? Explain different control statements.

16) a) Explain the function definition and function prototyping.
    b) Write a C program to find GCD of two numbers using recursive function.

17) a) Explain linear search algorithm to search an element in an array with program.
    b) Explain different storage classes in C language.

18) a) Write a C program to find the product of two matrices.
    b) Explain string operations.

19) a) Explain definition, declaration and initialization of structure.
    b) Explain call by value and call by reference with example.

20) a) Explain the writing and reading the information with file.
    b) What is macro? Explain the macro definition with example.
I. Answer any ten questions: (10×2 = 20)

1) Define algorithm.
2) Define system software.
3) What is header file?
4) What are the rules for declaring variables in C?
5) Give the syntax and example for If-Else statement.
6) What is the difference between break and continue?
7) How to declare and initialize two dimensional array?
8) Difference between Strcmp() and Strcmpi().
9) What is Mallac() and Calloc()?
10) Give the difference between * and & in C pointer.
11) What is file pointer?
12) What are command line arguments?

II. Answer any five of the following: (5×10 = 50)

13) a) Explain the structure of a C program.
   b) Write an algorithm and flowchart to find largest of 3 numbers.

14) a) Explain formatted input-output function in C.
   b) Explain binary operators in C with examples.
15) Write a menu driven C program using switch-case to find:
   a) Sum of the digits of a number  
   b) Factorial of N.  

16) Explain different types of user-defined functions with examples.  

17) a) Write a C program to arrange the given set of numbers in ascending order.  
    b) Write a program to find the product of matrices of order m × n.  

18) a) Explain call by value and call by reference with examples.  
    b) Explain array of structures with an example.  

19) a) Explain different modes of opening a file.  
    b) Write a C program to copy contents of one file to another.  

20) Write short notes on:
    a) Local variable and global variable.  
    b) While loop and Do-while loop.
First Semester B.C.A. Degree Examination, November/December 2014  
(Y2K14 Scheme) (CBCS)  
COMPUTER SCIENCE  
BCA 103 T : Problem Solving Techniques using C  

Time : 3 Hours  
Max. Marks : 70  

Instruction : Answer all Sections.

SECTION - A  

I. Answer any ten questions :  
(10x2 = 20)  

.1) What is structured programming ?  
.2) What are enumeration variables ? How are they declared ?  
.3) What are the different data types in C ?  
.4) Write the syntax of conditional operator and give example.  
.5) What happens when an array with a specified size is assigned ?  
   - a) with values fewer than the specified size.  
   - b) with values more than the specified size.  
.6) What are preprocessor directives ?  
.7) What is function prototype ? Why is it necessary ?  
.8) How does structure differ from an union ?  
.9) What are the advantages of using recursive functions ?  
10) What is pointer ? How is a pointer initialized ?  
11) How does an append mode differ from a write mode in files ?  
12) How does a EOF differ from feof ?  

P.T.O.
II. Answer any five of the following: (5×10=50)

13) a) What are various symbols used in designing a flowchart? Explain by taking an example.
   b) Describe in detail the syntax errors, logic errors and run time errors.

14) a) Explain the different unary operators available in C.
   b) Write a algorithm to find the roots of the quadratic equation.

15) a) What is switch statement? What are the advantages of switch statement compared to nested if statement?
   b) Compare in terms of their functions, the following pairs of statements
      i) while and do... while.
      ii) break and continue.

16) a) Differentiate between call by value and call by reference function.
   b) Define the term scope of a variable. What are the different types of scopes used in C? Explain in detail.

17) a) In what way does an array differ from an ordinary variable? Explain the characteristics of array in C.
   b) Write a program to find the largest element in the list of n elements.

18) a) How does structure differ from an array? Explain.
   b) Describe various string library functions used in C.

19) a) Explain the relationship between a pointer and the name of the array.
   b) Explain the arithmetic operators that are permitted to pointers.

20) Write a short note on:
   a) Bit fields.
   b) Formal and actual arguments.
   c) Dynamic memory allocation.
   d) Command line arguments.