ST. JOSEPH'S UNIVERSITY, BENGALURU -27
BCA (DATA ANALYTICS) – I SEMESTER
SEMESTER EXAMINATION: OCTOBER 2023
(Examination conducted in November /December 2023)
BCADA1121: Fundamentals of Computing and Programming Skills Using C
(For current batch students only)

Time: 2 Hours   Max Marks: 60

This paper contains TWO printed pages and THREE parts

PART-A

ANSWER ALL THE QUESTIONS   5 X 2 = 10

1. Write short notes on Keywords in C Language.
2. What is the difference between the statements a = 5 and a == 5 in C Language?
3. Declare a float array of size 5 and assign 5 values to it.
4. What are the key differences between structure and union?
5. Discuss internal and external sorting in C Language.

PART-B

ANSWER ANY FIVE QUESTIONS   5 X 4 = 20

6. Convert the following
   i. $(1001001100)_2 \rightarrow (\ ? \ )_{10}$
   ii. $(2020.65625)_{10} \rightarrow (\ ? \ )_8$
7. Write a program using control structure if…else that examines the value of an integer variable called rating and print one of the following messages,
   "**Not Recommended**" – if the value of the rating is less than 2
   "**Recommended**" – if the value of the rating is lies between 2 and 4
   "**Highly Recommended**" – if the value of the rating is above 4
8. Explain the usage of the strcat( ) function in C Language with a program.
9. Define Array. Explain how an Array can be declared, initialized, and accessed by specifying the corresponding index.
10. Explain the concept of pass-by-value and pass-by-reference. Write a C Program to swap the content of two variables using pass-by-reference.
11. Write a C Program to read and write the contents using file I/O operation.
12. Devise an algorithm to perform push and pop operations in a stack.

PART-C

ANSWER ANY THREE QUESTIONS   **3 X 10 = 30**

13. Minimize the following Boolean function using Karnaugh Map

       F(A, B, C, D) = Σm(3, 4, 5, 7, 9, 13, 14, 15)

14. Write a C Program to multiply two matrices (2D array) which will be entered by a user. The user will enter the order of a matrix and then its elements and similarly the second matrix. If the entered order of the two matrices is such that they cannot be multiplied by each other, then an error message is displayed.

15. Write a C program that defines a structure employee containing the details such as empno, empname, department name, and salary. The structure has to store 20 employees in an organization. Use the appropriate method to define the above details and define a function that will display the contents.

16.

   i.   List the steps for sorting the following numbers using merge sort.   (5)
        (38, 27, 43, 3, 9, 82, 10)

   ii.   Implement Binary Search on the following set of items.   (5)
        (12, 18, 23, 25, 29, 32, 35, 40, 58, 66) and key = 18.