

Roll No. _____

22/5058**B.C.A. (Second Semester)****Examination, 2022****First Paper****(C Programming)****Time : Three Hours]****[Maximum Marks : 75**

Note : Attempt any **five** questions. **All** questions carry equal marks.

Note : The answers to short answer type questions should not exceed **200** words and the answers to long answer type questions should not exceed **500** words.

1. (a) Define an array. How are arrays declared and initialized? Write a C program to add two matrices A and B of size 3×3 . 5
- (b) Write a C program to count the total number of non-zero elements in a two-dimensional array. 5

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- (c) Differentiate between a character array and a string by using suitable example. 5
2. (a) What is pointer? With the help of a program to find the square of a number, explain how a function returns a pointer. 8
- (b) Differentiate between a variable address and a variable value. How can we access a variable's address and its value using pointer? 7
3. (a) Write a program to :
 - (i) Find the length of a string
 - (ii) Print the reverse of the string
- (b) Explain the following user-defined data types :
 - (i) `typedef`
 - (ii) `enum`
4. (a) What is the difference between a structure and a union? Write the syntax for declaration of a union, initializing the elements of union and also accessing it's numbers in the program. 5

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- (b) Explain the use of self referential structure, with the help of suitable example. 5
- (c) Using structures, write a C program to calculate the gross salary and Net salary, if Basic pay, Grade pay, TA and DA and other allowances and deductions are given as inputs. 5
5. (a) Define a preprocessor in C. How is it implemented? Explain with the help of an example. 7
- (b) Differentiate between call by value and call by reference using an example program for each. 8
6. (a) Using file handling concept, write a C program to read a file and count the number of lines in the file. 5
- (b) What is a file? Differentiate between a text file and a binary file. 5
- (c) Explain the differences between static, auto, register and global variables with an example for each. 5

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7. (a) Write a C program to display the following pattern using "for" loop : 7
- 5
5 4
5 4 3
5 4 3 2
5 4 3 2 1
- (b) Write short notes on the following with the help of an example mentioning their use in the program : 8
- (i) getch ()
(ii) gets ()
(iii) # define
(iv) Goto statement
8. (a) Write a recursive function in C to generate a Fibonacci series. 5
- (b) Explain the use of the following functions in C with the help of suitable example. 10
- (i) malloc ()
(ii) fseek ()
(iii) ftell ()
(iv) realloc ()
(v) calloc ()