

--	--	--	--	--	--	--	--	--	--

## First/Second Semester B.E. Degree Examination, Dec.2019/Jan.2020 Programming in C and Data Structures

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. What is Pseudocode and its use? Write a Pseudocode for adding four (4) numbers. (04 Marks)  
b. Explain the structure of a 'C' program with an example syntax. (08 Marks)  
c. Write a 'C' program to SWAP the values of two (2) variables without using third variable. (04 Marks)

OR

- 2 a. What is an identifier? Give any five rules that are to be followed, while declaring a variable. Give example for valid and invalid. (05 Marks)  
b. What is an operator? Explain different types of operators in 'C'. (07 Marks)  
c. If  $a = 2$ ,  $b = 8$ ,  $c = 4$ ,  $d = 10$ , what is the value of each of the following expression.  
i)  $a + b/c * d - c/a$     ii)  $(b/a)\% c$     iii)  $a ++ + b -- + d ++$     iv)  $++ a + b -- + ++d$ . (04 Marks)

### Module-2

- 3 a. Explain switch statement with syntax. Write a program to simulate simple calculator that performs arithmetic operations using switch statement. (08 Marks)  
b. List four differences between while loop and do-while loop along with, syntax and example. (08 Marks)

OR

- 4 a. What are the different types of conditional decision making statements? Explain each with an example. (09 Marks)  
b. Write a C program to find the roots of a quadratic equation (check for valid input values) (07 Marks)

### Module-3

- 5 a. What is an array? How an array is declared and initialize, explain. (06 Marks)  
b. Explain any four string manipulation functions along with example each. (04 Marks)  
c. Develop 'C' function ISPRIME (num) that accepts an integer argument and return 1 if argument is prime, a 0 otherwise. Write a C program that invokes this function to generate prime no's between the given ranges. (06 Marks)

OR

- 6 a. What is a function? Briefly explain parameters passing mechanism of functions. (05 Marks)  
b. Write a C program to read a sentence and print the frequencies of each VOWEL total count of CONSONANTS. (06 Marks)  
c. Write a recursion program to compute factorial of a given number 'n'. (05 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg.  $42+8 = 50$ , will be treated as malpractice.

**Module-4**

- 7 a. What is structure? Explain declaration of structure with an example. (05 Marks)  
 b. Write a program to input the following detail of 'N' students using structures RollNo, Name, Marks, Grade (07 Marks)  
 Print the names of the students with marks  $\geq 70$ . (04 Marks)  
 c. What is a file, explain fopen( ) and fclose( ) functions.

**OR**

- 8 a. Explain the following file operations along with syntax and example.  
 i) fopen( ) ii) fscanf( ) iii) fprintf( ) iv) fgets( ). (08 Marks)  
 b. Given 2 university information file studentname.txt and usn.txt that contains students name and USN respectively. Write a program to create a new file called "output.txt" and copy the contents of file "studentname.txt and usn.txt into output file in the sequence shown below:

Student Name	USN
Name - 1	USN - 1
Name - 2	USN - 2
.	.
.	.
.	.
.	.

(08 Marks)

**Module-5**

- 9 a. Define pointer? Explain with an example, the declaration and initialization of pointer variable. (04 Marks)  
 b. Explain the following 'C' functions  
 i) malloc( ) ii) calloc( ) iii) realloc( ) (06 Marks)  
 c. Write a C program to read two numbers and develop a function to swap these numbers using pointers. (06 Marks)

**OR**

- 10 a. Explain any five preprocessor directives in C. (05 Marks)  
 b. What are primitive and non-primitive data types. (04 Marks)  
 c. What is stack? Explain stack operations with examples program. (07 Marks)

\*\*\*\*\*