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17PCD13/23

First/Second Semester B.E. Degree Examination, July/August 2022 Programming in C and Data Structures

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define algorithm. Write a pseudo code to find the sum and average of given three numbers. (06 Marks)
- b. Write a general structure of C. Explain with an example. (06 Marks)
- c. Explain identifiers. Discuss the rules to be followed while naming identifiers. Give examples. (08 Marks)

OR

- 2 a. What is Type Conversion? What are different types of Type Conversion? Explain with example. (08 Marks)
- b. Explain different types of input output functions in C with syntax and examples. (06 Marks)
- c. List all operations used in C. Give example. (06 Marks)

Module-2

- 3 a. Write the difference between while and do-while loop along with syntax and example. (08 Marks)
- b. Explain break, continue and go to statement with syntax and examples. (08 Marks)
- c. Write a C program to find factorial of 'n' by using while loop. (04 Marks)

OR

- 4 a. Write a C program to implement a calculator program, that accepts values and operator from user. (07 Marks)
- b. List the types of looping statements in C. Explain any two with syntax and example. (07 Marks)
- c. Develop a C program to read a year as an input and find whether it is leap year or not. (06 Marks)

Module-3

- 5 a. Define an array. Explain different methods of initialization of one dimensional and two dimensional array. (08 Marks)
- b. Explain function prototype, function call, function definition with example to each. (08 Marks)
- c. Explain string declaration and initialization with examples. (04 Marks)

OR

- 6 a. Explain two categories of argument passing technique with examples. (08 Marks)
- b. What is recursion? Write a C program to compute polynomial coefficient ncr using recursion. (06 Marks)
- c. Write a C program to read N elements and find the biggest element in the array. (06 Marks)

Module-4

- 7 a. What is structure? Explain the C syntax of structure declaration with example. (04 Marks)
b. Write a C program to pass structure variable as function argument. (06 Marks)
c. What is a FILE? Explain any five manipulation functions with example. (06 Marks)
d. Give an example for array of structure and explain it in detail. (04 Marks)

OR

- 8 a. Write a C program to maintain a record of 'n' students details using an array of structures with four fields (roll no, name, marks and grade). Assume appropriate data type for each field. Print the marks of the student given the student name as input. (08 Marks)
b. Explain structure within a structure with an example. (06 Marks)
c. Explain the following input and output file functions:
(i) putc() (ii) fputs() (iii) getc() (iv) fgets() (06 Marks)

Module-5

- 9 a. What is pointer? Write a C program to find the sum and mean of all elements in an array using pointer. (10 Marks)
b. What is dynamic memory allocation? Explain different dynamic memory allocation functions in C. (06 Marks)
c. Define stack. Explain operations of stack with neat diagram. (04 Marks)

OR

- 10 a. Write a C program to swap two numbers using call by pointers (address) method. (06 Marks)
b. Explain how pointers and arrays are related with example. (04 Marks)
c. Explain any two pre-processor directives in C. (04 Marks)
d. Write a short note on linked list and trees. (06 Marks)
