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18CPS13/23

First/Second Semester B.E. Degree Examination, Feb./Mar. 2022

C Programming for Problem Solving

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Write an algorithm and draw flow chart, which reads 3 sides of a triangle and prints whether it is equilateral, isosceles and scalene. (08 Marks)
- b. Write basic structure of C program and explain its different sections. Also, give an example. (08 Marks)
- c. Identify the following variable names. State whether variable is valid or invalid. If invalid give reasons i) INT ii) for iii) larea iv) STATIC. (04 Marks)

OR

- 2 a. List and mention function of any five flow chart symbols. (05 Marks)
- b. Define C-token. List and explain different C-tokens. (10 Marks)
- c. Write a C program to swap contents of two variables. Print contents of variable before swap and after swap. (05 Marks)

Module-2

- 3 a. Distinguish between the following functions:
i) scanf() and gets()
ii) scanf() and printf()
iii) putchar() and printf() (06 Marks)
- b. Write a C program to generate and print first 'N' Fibonacci numbers using looping constructs. (08 Marks)
- c. Write the syntax of Nested if..else statement and explain its working. (06 Marks)

OR

- 4 a. Write a C program to print the string "PROGRAM" in following pattern using formatted output statement

```
          P
         P R
        P R O
       P R O G
      P R O G R
     P R O G R A
    P R O G R A M
```

(08 Marks)

- b. Distinguish between the following:
i) while loop and do..while loop (06 Marks)
- ii) break and continue. (06 Marks)
- c. Write the syntax of else..if ladder and explain its working. (06 Marks)

Module-3

- 5 a. Define an array. Write the syntax of declaration and initialization of – one-dimensional array and two-dimensional array with example for each. (10 Marks)
- b. Write a C program to search a key element in the given sorted array of integer numbers using binary search technique. (06 Marks)
- c. Write a C program to copy one string to another without using strcpy(). (04 Marks)

OR

- 6 a. Write a C program to read a square matrix A ($m \times n$) and find the trace of the matrix. (08 Marks)
- b. List advantages and disadvantages of array. (06 Marks)
- c. Write the syntax and give one example for built-in string functions listed below:
i) strcmp() ii) strcpy() iii) strcmp() iv) strcat() v) strncat() vi) strlen() (06 Marks)

Module-4

- 7 a. List and explain two techniques for passing parameters from one function to another by taking an example of C program. (10 Marks)
- b. Differentiate between recursion and iteration. (06 Marks)
- c. Write a C program to find factorial of a given number using recursion. (04 Marks)

OR

- 8 a. Write a C program to compute nCr for the given values of n and r using recursion. (10 Marks)
- b. Distinguish between built-in functions and user defined functions. (04 Marks)
- c. List any six benefits of functions. (06 Marks)

Module-5

- 9 a. Write a note on the following by giving segment of C program:
i) Array of structure (08 Marks)
ii) Structure within a structure. (04 Marks)
- b. Define pointer. Mention any two differences between a pointer variable and a normal variable. (04 Marks)
- c. What is pre-processor directives? Mention significance of following C-pre-processors:
i) #ifdef ii) #pragma iii) #include iv) #undef v) #define vi) #error (08 Marks)

OR

- 10 a. Create a structure student having members name and USN. Write a C program which reads details of 5 students and print the same. (10 Marks)
- b. Define macro. Using macros, write a C program to find area of circle. (06 Marks)
- c. Define pointer. Write the syntax and give an example of declaring and assigning a value to pointer. (04 Marks)
