R5

B.Tech I Year (R05) Supplementary Examinations, December 2010
C PROGRAMMING & DATA STRUCTURES
(Civil Engineering, Electrical & Electronics Engineering, Electronics & Communication Engineering,
Computer Science & Engineering, Electronics & Instrumentation Engineering, Biomedical
Engineering, Information Technology, Electronics & Control Engineering, Electronics & Computer
Engineering, Computer Science & Systems Engineering)

Time: 3 hours   Max Marks: 80
Answer any FIVE questions
All questions carry equal marks
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1. (a) What is an Algorithm? Write the various criteria used for judging an Algorithm?

    (b) Write an algorithm to find the roots of a quadratic equation for all the cases.

2. (a) What do you mean by functions? Give the structure of the functions and explain about the arguments and their return values.

    (b) Write a C program that uses a function to sort an array of integers.

3. (a) Write a 'C' Program to compute the sum of all elements stored in an array using pointers.

    (b) Write a 'C' program using pointers to determine the length of a character string.

4. (a) Explain the different ways of passing structure as arguments in functions.

    (b) Write a C program to illustrate the method of sending an entire structure as a parameter to a function.

5. (a) What are the file I/O functions in C. Give a brief note about the task performed by each function.

    (b) Write a program to read an input file and count the number of characters in the input file.

6. Use the operations push, pop, stacktop, and empty to construct operations on stack, which do each of the following:

    (a) Given an integer n, set i to the nth element from the top of stack, leaving the stack without its top n elements.

    (b) Set i to the bottom element of stack, leaving the stack unchanged.

7. Write a C program to insert and delete the elements from circular doubly linked list.

8. What is a heap? Show how would you perform a heap sort using a heap. Derive the time complexity of the heap sort in the best and worst cases.

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