B.Tech I Year (R09) Regular & Supplementary Examinations, May/June 2011
PROGRAMMING IN C AND DATA STRUCTURES
(Common to all branches)

Time: 3 hours   **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks
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1. Explain the three categories of statements for Algorithm Development with examples.

2. (a) What is a comment . Write the syntax for writing comments in C. What are the guide lines followed while writing comments?

   (b) Explain the general form of a C program with an example.

3. (a) Explain about call by reference with an example.

   (b) What is recursion? What are the advantages and disadvantages of recursion?

4. (a) Explain the concept of pointer to pointers with examples.

   (b) Explain the concept of void pointers with examples.

5. (a) Write a program in C to display the size of structure elements using size of operator?

   (b) Explain the different ways of defining the structure and how to access the structure members with examples?

6. Write a C program that uses fseek () function to alter the file pointer in multiples of 2 and copy those contents into a new file.

7. (a) Explain the various operations on a stack.

   (b) Write a program implementing stack.

8. (a) Why quick sort is said to be the most efficient sorting method? Discuss with example.

   (b) Write a program in C to perform quick sort in a given list of integers.

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1. With a neat diagram explain the role of the compiler in the process of developing and testing a high level language program?

2. What is an operator? Explain different operators in C.

3. What is an array? What are the advantages of arrays over a ordinary variables? How arrays are declared and initialized ?

4. Explain various dynamic memory allocation functions with examples.

5. Write a program in C that represents the details of an employee using structure and also uses structures within structure to represent his pay details. The program should define two functions one for reading the data and one for displaying the data?

6. Write a C program that displays the attributes of a file.

7. (a) List the applications of stack.
   (b) Explain the procedure to convert infix to postfix using stack.

8. (a) Apply insertion sort to the list of integers found in a file. Write the sorted output to the file.
   (b) Justify the fact that the efficiency of quick sort is O(logn) under best case.

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1. (a) Explain the advantages and disadvantages of using high level languages over machine level languages.

   (b) What is in Integrated Development Environment(IDE).Explain its features.

2. (a) What are bitwise operators in C? Write a c program to shift input data by two bits right.

   (b) What is a token? Explain different C tokens.

3. (a) Write a program to find the product of all the elements in an array?

   (b) How is a multidimensional array declared and initialized?

4. Explain any seven string handling functions with examples.

5. (a) How to use arrays as structure members. Illustrate with example?

   (b) How to use indirection notation and selection notation to access the members of structure with an example?

6. Write a program in C that reverses the contents of a file and copies it into a new file.

7. Discuss searching operations with singly linked list.

8. (a) Define sequential searching method.

   (b) Write a program in C using functions to perform selection sort in a given list of integers.

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1. (a) What is main memory? Explain two types of main memory?
   (b) What is an input device? Mention at least five input devices.

2. With examples explain different decision statements in C?

3. (a) Distinguish between call by value and call by reference.
   (b) Write a program to find the sum of all elements in an array.

4. (a) Explain declaration and initialization of arrays of strings.
   (b) Write a C program to find whether a given string is palindrome or not.

5. (a) How to store the address of structure variable. Explain with example?
   (b) Write a program in C to declare structure variable book containing the members name, author and pages and display the contents of the structure by using a pointer to the structure.

6. (a) Write a program in C that converts the contents of a file in to capital letters.
   (b) Write a C program that sorts the contents of a file containing a list of students' names.

7. (a) Write the algorithm to convert infix expression to postfix.
   (b) Explain infix and prefix notations of representing expressions.

8. (a) Write a program in C using functions to apply merge sort to the given arrays of integers.
   (b) Discuss linear search algorithmic technique with an example.

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