

Code: 9A05101

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B. Tech I Year (R09) Regular &amp; Supplementary Examinations, May 2012

**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 What is a flow chart? Explain different symbols used for flow chart.
- 2
  - (a) What are the shift operators? Write a program to shift the entered number by three bits left and display the result.
  - (b) Write a program to test a given number is prime number or not.
- 3 Write a short notes on the following storage classes:
  - (a) Automatic.
  - (b) Static.
  - (c) Register.
  - (d) External.
- 4
  - (a) What is pointer? List out the reasons for using pointers.
  - (b) How to use pointers as arguments in a function? Explain through an example.
- 5 Write a program in C that defines a structure student to contain name, HTNO, branch of study and define the nested structure marks with member subject1, subject2, subject3 and total. Define three functions where one function sums the marks in subject1, subject2 and subject 3 and places the sum in the total. The second function is used to display the details of the students with marks. The third function is used to display the details according to the ascending order of marks.
- 6 Write a program in C that reverses the contents of a file and copies it into a new file.
- 7
  - (a) Distinguish between stack and queue.
  - (b) Explain the representations of stack and queue.
  - (c) What is header? Explain its role in linked list.
- 8
  - (a) Define sorting.
  - (b) What is the difference between internal and external sorting methods?
  - (c) Give examples for internal and external sorting methods.

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- 1 (a) What is operating system? What are the responsibilities of an operating system?  
(b) Distinguish between high level language program and assembly language program.
- 2 (a) What is difference between break and continue statements? Explain with examples.  
(b) Write a program to find-out the average of the even numbers by using continue statement.
- 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 process of declaring and initializing pointers. Give examples.  
(b) Write a C program to illustrate the use of indirection operator '\*' to access the value pointed by a pointer.
- 5 (a) Define structure and give the general syntax for structure.  
(b) How to copy and compare structure variables? Illustrate with example.  
(c) Give the differences between structures and arrays.
- 6 (a) Write a program in C that reads the name of a file and displays the contents of the file on the user screen.  
(b) Write a program in C that reads the contents of a file containing integers and displays the largest among the integers on the user screen.
- 7 Discuss insertion and deletion operation in a queue using arrays.
- 8 (a) Write a C program using functions to perform linear searching.  
(b) Write a C program using functions to perform binary searching.

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- 1 Write short note on the following:
  - (a) Assembler.
  - (b) Interpreter.
  - (c) Compiler.
  - (d) Linker.
- 2
  - (a) Write a brief description about control statements in C.
  - (b) Write a program to reverse a number using for statement.
- 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
  - (a) Explain the concept of pointer to functions with examples.
  - (b) Write a program to find sum of two matrices using pointers.
- 5
  - (a) Why we need structure in C? Explain.
  - (b) How to declare and initialize a structure with examples?
- 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 Write a program to evaluate postfix expression.
- 8
  - (a) Write a program that checks for the occurrence of a given element in the array. Display messages if the number is not found in the list.
  - (b) Write a program in C to sort the given list of student's names in alphabetical order.

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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 (a) What is a loop? Why it is necessary in the program? What happens if you create a loop that never ends?  
(b) Write a program that reads a positive integer and print its equivalent binary number.
- 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 Write a program in C that creates an enumerated data type for 7 days of the week. Initialize the first day with 1. Get a day number from the user and display its corresponding day in words.
- 6 Explain in detail the low-level file handling functions. Give example for each.
- 7 Discuss with example the following with respect to singly linked list  
(a) Inserting an element as the first element in the list.  
(b) Inserting an element as the last element in the list.  
(c) Inserting an element at the specified position in the list.
- 8 (a) Discuss binary search algorithmic technique with an example.  
(b) Write a program in C to perform linear searching method.

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