

I B.Tech - Regular Examinations, June 2009
C PROGRAMMING AND DATA STRUCTURES
(Common to Civil Engineering, Electrical & Electronic Engineering,
Electronics & Communication Engineering, Computer Science &
Engineering, Chemical Engineering, Electronics & Instrumentation
Engineering, Bio-Medical Engineering, Information Technology, Electronics
& Control Engineering, Computer Science & Systems Engineering,
Electronics & Telematics, Electronics & Computer Engineering,
Aeronautical Engineering, Instrumentation & Control Engineering and
Bio-Technology)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Write a 'C' program to find the squares of N numbers using do - while.
(b) Write a 'C' program to convert Decimal Number to Octal Number. [8+8]
2. Write a program to evaluate the equation $s = \text{sqr}(m() + n())$ using function. [16]
3. Define an array. What are the different types of arrays. Explain. [16]
4. (a) Write a program to store and print name, address ,rollno using structures.
(b) What are the differences between structure and unions. Explain [8+8]
5. Write a program to read series of digits and store them into a file, then read the numbers from the file and write all odd & even numbers into different files. [16]
6. Write a program to explain selection sort . Which type of technique does it belong. [16]
7. What are the advantages and disadvantages of stack ? Write a program to illustrate queue operation ? [16]
8. (a) Define multi graph and graph with self- loop .
(b) Explain connected graph with example. [8+8]

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1. What are the different format specifiers available for Input and Output statements. Explain with an example? [16]
2. How automatic and static variables are used in different blocks. Explain with a program. [16]
3. What is dynamic memory allocation ? Mention the advantages of memory allocation and discuss its function . [16]
4. Define Structure and write the general format for declaring and accessing members. [16]
5. (a) Write the syntax for opening a file with various modes and closing a file .
(b) Explain about file handling functions . [8+8]
6. Write a program to sort the elements whose worst case is $O(n^2)$ and average case is $O(n \log n)$. [16]
7. Compare singly and doubly linked list to perform insertion operation . [16]
8. Explain Kruskal's method of determining the minimal spanning tree. [16]

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1. (a) Mention the use of sizeof and pointer operator in 'C'. Explain them with a program.
(b) How comma and member selection operators used in 'C'. Explain with program. [8+8]
2. Write a program to find sum of given series by using function with argument and return value $e = 2 + 3/1! - 6/2! + 9/3! - 12/4! \dots!$ [16]
3. (a) Write short notes on pointer arithmetic .
(b) How to use pointers in expression. Explain [8+8]
4. Evaluate complex number using structure and pointer. [16]
5. What do you mean by binary files explain with an example . [16]
6. (a) Explain selection sort indetail.
(b) Explain bubble sort indetail. [8+8]
7. Write a program to illustrate the various operations of singly linked list . [16]
8. (a) Write a program to swap nodes in a binary tree.
(b) Write a program to find min and max nodes in a binary tree. [8+8]

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1. How algorithm is different from flowchart? Write an algorithm and draw flowchart for finding greatest among three given numbers. [8+8]
2. What is a function ? What are the different types of functions? Explain function with no argument and no return type with an example. [16]
3. Write short notes on pointers. [16]
4. (a) How structure is implemented using arrays? Give an example.
(b) Compare structure and union. [10+6]
5. (a) Write the syntax for opening a file with various modes and closing a file .
(b) Explain about file handling functions . [8+8]
6. Write an algorithm for routine merge(x,lb1,ub1,ub2) that assumes that x[lb1] through x[ub1] and x[ub1 + 1] through x[ub2] are sorted and merges the two into x[lb1] through x[ub2]. [16]
7. Write a program to delete a node in singly and doubly linked list . [16]
8. Explain binary search tree operations indetail. [16]
