



Summer Term Examinations (July 2019)

School: School of Engineering

Program: BCA (CTIS/MACT)

Course: Data Structure using C

Course Code: CSC108

Semester: Summer Term

Max Marks: 50

Duration (mins): 90 mins

Section A

Q1. Answer the following. (Any Five)

10 Marks

- Define Data Structure.
- What is difference between static and dynamic memory allocation.
- Define prefix, infix and postfix notation with example.
- List Different types of linked list.
- State advantages of linked list over arrays. Explain different applications of linked list.
- Define stack.
- List the different types of Trees.

Section B

Q2. Answer the following (Any Four)

20 Marks

- Solve Infix and Postfix for given data. $A+B+C$
- Consider the following array
 $A = \{32, 36, 41, 45, 53, 58, 64, 67, 70, 75, 78, 82, 86, 98, 99\}$ and search for element $e=58$ using binary search technique. (Solution needs to be demonstrated pictorially with solution for each iteration).
- Write the bubble sort algorithm/ pseudocode/ step with example

d) Write an algorithm for evaluation of the postfix expression. Evaluate following expression using stack. Show all the steps.

5 6 2 + * 12 4 / -

e) What is Queue? Explain circular queue and double ended queue with diagram.

f) Define Graph. Explain any three application area of graph

Section C

Q3. Answer the following (Any Two)

20 Marks

a) Write a c program for memory allocation functions: malloc() and calloc()

b) Explain selection sorting technique with algorithm. Use selection sort algorithm to sort following list of numbers:

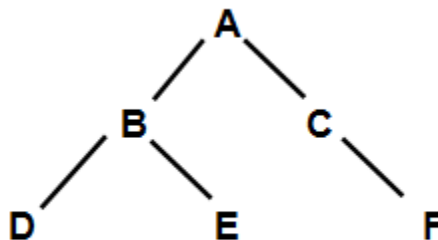
25	98	34	32	42	6	72	60	12	18
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c) What is Stack? Write an algorithm and pseudocode/C code for PUSH () and POP () operations in Stack.

d) Write and explain the procedure and diagram for inserting and deleting a node at any position in the singly linked list.

e) What are binary trees? Enlist various binary tree traversal techniques.

Apply these techniques to traverse the following tree:



*****ALL THE BEST*****