SOUTHEAST UNIVERSITY

School of Science & Engineering

Department of CSE

Spring - 2019 Final Examination

Program:	B. Sc. in CSE	**Section:**	04
Course Codes:	CSE1033	**Title:**	Data Structure
Room:	**BBA SH**	**Date & Time:**	**28-04-19; 02:30PM**
Duration:	**120** minutes	**Marks:**	**40**

Instructions and Information:

- Use the Answer Script for answering the following questions.
- Examinees are not allowed to carry any mobile phone/books/notes/written documents in the exam hall.

Part – A
Answers all questions [4 X 10 = 40]

1. **a)** For the following sequence draw the Binary search tree (BST): **3**

7 – 4 – 12 – 2 – 6 – 9 – 19 – 3 – 5 – 8 – 11 – 15 – 20 [Assume first element as ROOT]

b) Write traversal sequence for the above **BST**: [Just write the sequences] **3**

- **i.** Pre-order
- **ii.** In-order
- **iii.** Post-order

c) Write the algorithm for Binary search tree (BST) 'Find Successor' operation. **4**

2. **a)** For "Double linked list" write pseudo/C++ code for the following operations: **5**

- **i.** Insert
- **ii.** Delete

b) Differentiate among Double linked list and Single linked list? **3**

c) What is " ***Sentinel*** "? **2**

3. **a)** Write the pseudo code of "Insert & Delete" operation for a STACK. **3**

b) Write the pseudo/C++ code for "Merge" operation of Merge-Sort. **3**

c) Write the output of the following code **4**

```
#include<stdio.h>
#include<stdlib.h>
```

```
int main()
{
    int *a, *s, i;

    a = s = (int *) malloc(4 * sizeof(int));

    for (i = 0; i < 4; i++)
    {
        *(a + i) = i * 10;
        printf(" %d ", *(a + i));
    }
    printf("\n");
    printf("%d\n", *s++);
    printf("%d\n", (*s)++);
    printf("%d\n", *s);
    printf("%d\n", *++s);
    printf("%d\n", ++*s);
    return 0;
}
```

4. **a)** Write a recursive function that counts the number of three (3) digits in an integer. **6**

b) What do you understand by "Divide-and-Conquer Method"? **2**

c) If there are n people in a room and each person shakes hands once with every other person. What is the total number of handshakes? **2**

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