International Islamic University Chittagong

Department of EEE
Final Examination
Course Code:CSE-1203
Full Marks:50

Program: B.Sc. Engg. (EEE)
Semester: Autumn-2018
Course Title: Data Structure and Algorithm
Time: 02 hours 30 minutes

Figures in the right margin indicate full marks. Use separate script for each part.

PART-A

[Answer any <u>two</u> questions from the followings]

1(a).	What is Queue? How can queue differ from a stack.Write the procedure insert an element item into a Queue.	4
1(b).	Define following terms: i. Garbage collection ii. Overflow iii. Underflow	3
1(c).	Describe input restricted Deque with appropriate figure.	3
2(a).	Define linked list.Write the advantage and disadvantage of linked list over the linear array.	4
2(b).	Write an algorithm to Traversing linked list.	3
2(c).	Write the difference between linked list and array.	3
3(a).	Write a C program that prints the Fibonacci sequence of 22.	4
3(b).	What is Circular Header list? Write the advantage of Circular Header list over ordinary linked list.	3
3(c).	What is two-way linked list? Is there any advantage of two-way linked list over ordinary linked list? If yes, mention it.	3

PART-B

[Answer any <u>three</u> questions from the followings]

4(a).	What do you mean by complexity of algorithm? Write the worst case and average case complexities of four sorting algorithm.	3
4(b).	Write an algorithm to sort an array A of n elements using insertion sort.	3
4(c).	Suppose the following numbers are stored in an array **A: 44,33,11,55,77,90,40,60,99,22,88,66** Apply insertion sort algorithm to sort the array A and show each pass separately.	4
5(a).	Draw a Binary Tree for the following algebraic expression and write inorder, preorder traversal of this tree. [a+(b+c]*[{(d-e)+f}/{(f+g)*h}]	5
5(b).	Explain the represntation of Binary Trees in memory.	3
5(c).	How Binary Search Works? Give an appropriate example	2
6(a).	Draw a Haffman tree by showing step by step tree construction of following data: **22,4,7,9,9,17,3,5**	4
6(b).	Which Sorting Algorithm is best ? Show arguments in favor of your decision.	3
6(c).	What is General tree?"Binary tree is a special of general tree:-Do you agree?	3

Why or Why not? Explain

7(a).	What do you mean by complexity of algorithm? Write the worst case and average case complexities of four sorting algorithm.	2
7(b).	Compare between insertion and selection sort in three points.	3
7(c).	Write down the C code of Selection sort algorithm.	5