BCA(DS&AI) First Sessional Tests 2024-25

Fourth Semester

BCADSN14204: Basics of Design & Analysis of Algorithms

Time: 60 Minutes

Max. Marks: 30

(Section A)

(5*1=5)

Q.1: Attempt all Questions:

a. Define the pseudo-code for swapping two numbers.
b. What is the time complexity of Bubble Sort in all the cases?
c. What is the time complexity of merge sort?
d. Write down the properties of pseudo-code.
e. Difference between time and space complexity.

(Section B)

(2*7.5=15)

Q2. Attempt any Two:

a. Write the Algorithm for Bubble sort and Explain with an example how many passes you need to sort the array.
b. Sort the given number of elements by using heap sort. (9,22,7,8,15,25)
c. Define the Big-O, Big-Omega, and Theta notation with the help of an example.
d. Find the time complexity of the given function $f(n)=2n^2+n$ for the best, worst, average case.

(Section C)

(10*1=10)

Q3. Attempt any ONE:

a. Define the Quick Sort and sort the given number of elements (23,9,18,45,5,16,1,17)
b. Define Merge Sort and sort the given array(50,55,20,45,17,25,28,30)
c. Write the Selection sort algorithm with an example.