National University of Computer and Emerging Sciences, Lahore Campus

	Course:	**Design and Analysis of Algorithms**	**Course Code:**	**CS302**
	Program:	**BS(Computer Science)**	**Semester:**	**Spring 2018**
	Duration:	**10 Minutes**	**Total Marks:**	**10**
	Paper Date:	**20-Feb-18**	**Weight**	**3**
	Section:	**D**	**Page(s):**	**1**
			Roll No:	
	Exam:	**Quiz 2**	**Section:**	

Suppose you are given k sorted arrays, each with n elements, and you want to combine them into a single array of kn elements. Consider the following approach. Using the merge subroutine taught in lecture, you merge the first 2 arrays, then merge the $3rd$ given array with this merged version of the first two arrays, then merge the $4th$ given array with the merged version of the first three arrays, and so on until you merge in the final (kth) input array. What is the running time taken by this successive merging algorithm, as a function of k and n? Show complete working.