

## CSE2023 - ASSIGNMENT #4

Solve the following questions from course book. (Discrete Mathematics and Discrete Mathematics and Its Applications, 7th Ed. by Kenneth Rosen)

Note that we may grade selected questions from HWs.

\* Show all your works.

- 1) Prove that  $2^n > n^2$  if  $n$  is an integer greater than 4.
- 2) How many positive integers between 22 and 121 inclusive
  - a. are divisible by 3?
  - b. are divisible by 4?
- 3) How many bit strings of length 14 contain at least six 1s and at least five 0s?
- 4) What is the minimum number of students, each of whom comes from one of the 40 states, who must be enrolled in a university to guarantee that there are at least 80 who come from the same state?
- 5) The Turkish alphabet contains 21 consonants and 8 vowels. How many strings of ten lowercase letters of the Turkish alphabet contain
  - a. exactly three vowel?
  - b. exactly four consonants?
  - c. at least two vowel?
  - d. at least three vowel?
  - e. at least three consonants?

### Submission Instruction (10p)

Please zip and submit all your files using filename YourNumberHW2.zip (ex: 150629573HW2.zip) to Canvas system (under Assignments tab).

Your zip file should contain the following:

1. Single PDF file for solutions (150629573HW2.pdf)

### Notes:

1. Write your name and student ID on each sheet.
2. No late submission will be accepted