

## COSC 483 Assignment 01

Answer the following questions in the textbook

- 2.4,
- 2.5 (a – d),
- 2.12,
- 2.14,
- 2.22,
- 2.23

**Bonus:** You are Jack Ryan who is trying to pass through two security gates that use integral numbers as passcodes. The security guard at the first gate requires a special paper with a square number on it (so any square number would be fine), and the guard at the second gate requires the same special paper with a perfect number on it (definition below). You are given only a one-sided blank piece of special paper and you can only write one number on it (and cannot, by any mean, modify the paper nor the number after it is written). *Note that there is no integral number that is both perfect and square.* So, what number would you write to the special paper and present to the guards at both gates to successfully pass through them?

**Definition:** A perfect number is a positive integer that is equal to the sum of its proper positive divisors, that is, the sum of its positive divisors excluding the number itself. e.g.,  $6 = 1+2+3$ ,  $28 = 1+2+4+7+14$ , etc.