1 Problems 1 – 4: Chapter 3, Lin & Costello (the hand-out):

3.1, 3.6, 3.9, 3.15

2 Problem 5:

Show that Hamming codes achieve the Hamming bound (see Problem 3.15 above)

3 Problem 6:

Compute the probability of an undetected error for the (15,11) code on a BSC with cross-over probability $p = 10^{-2}$

**Important Note:**
Lin and Costello call $B^e$ the *generator matrix* and $B^d$ the *parity check matrix*. Furthermore in both their matrices the position of the diagonal $I$ matrix and the $A$ matrix are reversed. I.e., for us our $B^e$ matrix has the form

$$B^e = [I | A]$$

while their $G$ matrix has the form

$$G = [A | I]$$