

CS3235 Tutorial for week 7 (Sept 22nd-Sept 26th, 2003)

18th September 2003

1. **Question 1, Chapter 6 in notes:** What is the overriding reason that we use polynomial long-division to calculate an FCS?
2. Calculate the minimum extra bits needed for encoding a 16 bit value, with single-bit error detection.
3. **Question 2, Chapter 6 in notes:** Calculate the minimum extra bits needed for encoding a 16 bit value, with single-bit error recovery. *Show your own worked version of the Hamming calculation in the notes. Note that in this case we want to do error recovery, not just error detection.*
4. Calculate the minimum extra bits needed for encoding a 16 bit value, with two-bit error detection.
5. In the notes on page 64, it states that “*the benefit of error correcting codes is that they can improve the received BER without increasing the transmitted power*”. What is the meaning of this? Why does it improve the BER without increasing the power? Do we get something-for-nothing?