+1/1/60+

32031 Feedback Quiz, 2022/23, Week 10: General Revision I

Open books. 10–15 minutes. Not for credit. To be marked in class.

Question 1 ♣ Let C be the binary linear code with generator matrix $\begin{bmatrix} 0 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$. Fill in the correct responses below.

- List the codevectors of C: $C = \{$ ☐ $\}$
- C is a (☐ , ☐ , ☐)☐ code
- C is a [☐ , ☐ , ☐]☐ code
- The dimension of the dual code $C^\perp$ is ☐
- The weight enumerator of C is $W_C(x,y) =$ ☐
- If C is transmitted down BSC(p) then the probability of an undetected error is $P_{\text{undetect}} =$ ☐

  where the most significant term (the term with the lowest power of p) is ☐

Tick true statements:

- ◯ C is a self-orthogonal code
- ◯ C is a self-dual code
- ◯ C is an MDS code
- ◯ C is a perfect code
- ◯ C is a Hamming code
  - If true, what are r and q in $\text{Ham}(r,q)$? $r =$ ☐ $q =$ ☐
- ◯ C is a simplex code
  - If true, what are r and q in $\Sigma(r,q)$? $r =$ ☐ $q =$ ☐
- ◯ C is the even weight code E_n
- ◯ C is a cyclic code
  - If true, what are the generator polynomial and the check polynomial?

    $g(x) =$ ☐ $h(x) =$ ☐