

An (n, k) binary linear block code is generated by

$$G = \begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 & 1 \\ 0 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 & 1 & 1 \end{bmatrix}.$$

1. **(2 pts)** Determine all the codewords in this code.
2. **(3 pts)** Determine the minimum distance, d_{min} , of the code.
3. **(3 pts)** Find a parity-check matrix, H , for this code.
4. **(2 pts)** Given the received vector $\mathbf{z} = (0101100)$, perform the minimum distance decoding to find the most likely transmitted information three-tuple.