

**Question 1:** Find the decoding delay for each of the following frame sequences if the frame rate is 60 frames per second.

- I B B P B B I B B P B B I
- I I I I I I I I I I I I I I I
- I P I P I P I P I P I P I

**Question 2:** Consider a source with letters A, B, ..., G with probabilities  $\{3/8, 3/16, 3/16, 1/8, 1/16, 1/32, 1/32\}$ . Find the entropy. Compare with the mean length of the Huffman code for this source.

**Question 3:** Assume that the bandwidth available to you is 2 MHz. For a carrier to noise ratio of  $P/N=15$  dB determine the maximum bit rate possible? Compare with what you get with MPSK modulation with roll-off factor 0.1. Consider transmission with a BER (bit error rate) of  $10^{-5}$  as error-free.

Note: We have not yet covered the bandwidth efficiency and BER of MPSK in class. You may go through the course notes (Dr. Shayan's notes I have posted) or refer to a standard communication book.