Quiz 3 for Topics in Coding Theory 2021

Prasad

(2+2)+6 = 10 marks.

1.
   - Let $A \bigotimes B$ denote the Kronecker product of matrices A and B. Show that $(A \bigotimes B)(C \bigotimes D) = (AC) \bigotimes (BD)$
   - Show that $M_{2^m}^{(i)} = I_2 \bigotimes M_{2^{m-1}}^{(i)}$, where $M_{2^m}^{(i)} = I_{2^{m-i}} \bigotimes H_2 \bigotimes I_{2^{i-1}}$, where H_2 is the Hadamard matrix of order 2.

2. Calculate the computational complexity (number of operations) in the Reed's Majority Logic Algorithm to decode $RM(m, r)$ code upto half the minimum distance. Clear calculations are needed for every step. For this purpose, each addition, multiplication and table lookup operation of any particular bit, should counted as one operation.