

Communication Theory

Spring-2025

Assignment 6

Deadline: 11:59 pm April 24

Instructions:

- All questions are compulsory.
- Clearly state the assumptions (*if any*) made that are not specified in the questions.
- Submission format: `Rollnumber.pdf`

Cautions:

- One late homework assignment is allowed without penalty.
 - 2 marks will be deducted on other late assignments.
1. Write a MATLAB code for MAP detector for detecting the received 16-ary QAM, and 16-ary FSK signal over an AWGN channel. Plot the following:
 - (a) Received signal constellation for PAM and QAM for various E_b/N_0 values (separate plots for each E_b/N_0 value).
 - (b) Probability of error vs E_b/N_0 comparison for QAM, FSK. (Verify simulation results with the analytical in a single plot)
 - (c) Write a detailed report on your understanding of these modulation schemes and observation gains through the simulations.