

**KFUPM-EE DEPT.**  
**EE573- Digital Communications II**  
**Dr. Ali Muqaibel**

Assignment # 3: Equalization  
Ver. 3.0

From *Digital communications* (Fourth Edition) by John Proakis,

**Part 1: ( 5 points)**

Serial	Problem	Notes
1	10.4	The objective of this problem is to understand the impact of the channel through link budget analysis. <i>d) How many repeaters are required?</i>
2	10.10	ZFE, for the channel $x_m$ use [0.3224 0.89 0.3224] rather than the values given in the Book
3	10.22	
4	10.24	Part (e) is not included.
5	11.1	Part (a) & (b) to be able to answer, you should read 11.1.3

**Part 2: ( 5 points)**

Matlab:

Write a Matlab program to simulate the performance of the three channels in Figure 10.2-5. A curve similar to the one in Figure 10.2.4 should be generated for the ZFE. The no ISI case should be plotted also for comparison.

Generate a curve showing the Bit Error rate for the Equalized and non Equalized Channel.

Bonus: show the impact of more # of Taps

*Calculate Taps, Generate Data, Convolve with Channel, add noise, Convolve with equalizer, make decision, compare and find the number of bits in error, change noise power and then repeat..... Generate the curve.*

**Instruction:**

- For this homework, every two will work as one team and submit one solution.
- To encourage you to avoid copying, accuracy of the final answer will carry minor weight.
- Please start early to be able to meet the submission time.