Q1:

A $LiNbO_3$ based MZM was operated in a push-pull configuration and its transfer function is obtained as shown in figure. A DFB laser at 1550 nm, occupying a spectral with of 3MHz and with output power of 4 dBm was used for the characterization.

(a) From the transfer function, estimate the V_π of the modulator used.

(b) The minimum power obtained using this modulator is - 40 dBm and given that the insertion loss of the MZM is about 5 dB. Estimate the extinction ratio of the modulator.

(c) If this modulator was to be used to generate a 10 Gbps OOK data, where should the modulator be biased?.

(d) If this modulator was to be used to generate a 12.5 Gbps BPSK data, after how many bit transmission would the accumulated phase be 30°?