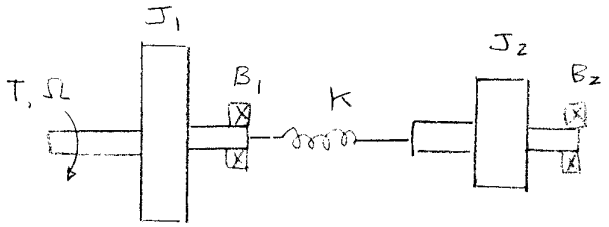
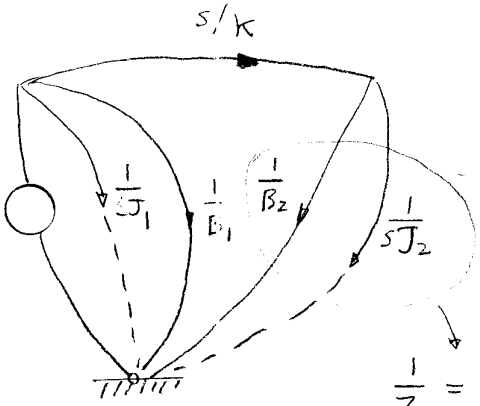
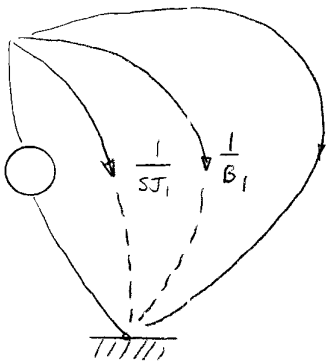



$$\frac{1}{Z_1} = \frac{1}{1/B_2} + \frac{1}{(SJ_2)^{-1}}$$

$$= B_2 + SJ_2$$

$$Z_1 = \frac{1}{B_2 + SJ_2}$$




$$\frac{S}{K} + Z_1 = \frac{S}{K} + \frac{1}{B_2 + SJ_2}$$

$$= \frac{J_2 S^2 + B_2 S + K}{K(B_2 + SJ_2)}$$

Finally

$$\frac{1}{Z(s)} = \frac{1}{1/sJ_1} + \frac{1}{1/B_1} + \frac{K(B_2+sJ_2)}{J_2s^2+B_2s+K}$$

$$= \frac{(B_1+sJ_1)(J_2s^2+B_2s+K) + K(B_2+sJ_2)}{J_2s^2+B_2s+K}$$

$$= \frac{J_1J_2s^3 + (J_1B_2+B_1J_2)s^2 + (J_1+J_2)Ks + KB_2 + B_1B_2s + B_1K}{J_2s^2+B_2s+K}$$

Hence

$$Z(s) = \frac{J_2s^2+B_2s+K}{J_1J_2s^3 + (J_1B_2+B_1J_2)s^2 + (KJ_1+KJ_2+B_1B_2)s + (B_1+B_2)K}$$