No.
Date :

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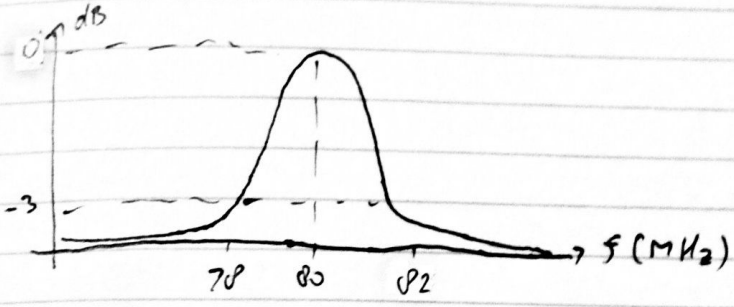
1. $f_r = 80\ MHz = 80 \times 10^6\ Hz$
$BW = 4\ MHz = 4 \times 10^6\ Hz$
$R_s = 100\ \Omega$

a.



$$Q = \frac{f_r}{BW} = \frac{80 \times 10^6}{4 \times 10^6} = 20$$

$$Q = \frac{R_s}{2\pi f_r L} \rightarrow L = \frac{100}{2 \cdot 3{,}14 \cdot 80 \times 10^6 \cdot 20} = 9{,}95 \times 10^{-9}\ H$$

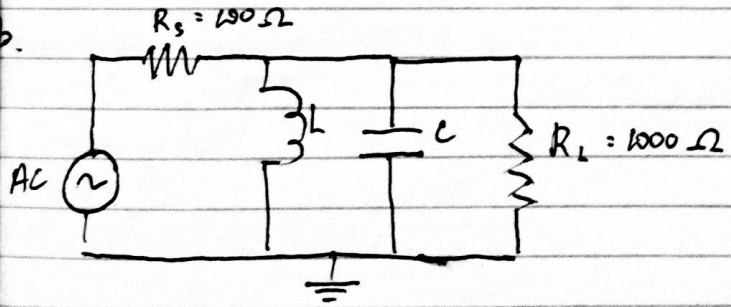
$$= 9{,}95\ nH$$

$$Q = 2\pi f_r C R_s \rightarrow C = \frac{Q}{2\pi f_r R_s} = \frac{20}{2 \cdot 3{,}14 \times 80 \times 10^6 \cdot 100}$$

$$= 3{,}98 \times 10^{-10}$$

$$= 398\ pF$$

b.



$$Q = \frac{R_p}{X_p} = \frac{R_p}{2\pi f_r L} \rightarrow 2\pi f_r C R_p$$

$$R_p = R_s \parallel R_L = \frac{R_s \cdot R_L}{R_s + R_L} = \frac{100 \cdot 1000}{100 + 1000} = 90{,}91\ \Omega$$

$$Q = \frac{R_p}{2\pi f_r L} = \frac{90{,}91}{2 \cdot 3{,}14 \cdot 80 \times 10^6 \cdot 9{,}95 \times 10^{-9}} = 18{,}19$$

$$BW = \frac{f_c}{Q} \rightarrow BW = \frac{80 \times 10^6}{18{,}19} = 4{,}4\ MHz$$

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c. $Q_{LS} = 50$

$Q_{LP} = 500$

$$R_{LS} = \frac{X_S}{Q_{LS}} = \frac{2\pi f_r . L}{50}$$

$$= \frac{2.3,14 \times 80 \times 10^6 \; 9,95 \times 10^{-9}}{50}$$

$$= 0,1\ \Omega$$

$$R_{LP} = R_{LS}(Q_L^2 + 1)$$
$$= 0,1(50^2 + 1)$$
$$= 250,1\ \Omega$$

$$R_{CP} = Q_{CP} \cdot X_P$$
$$= 500 . 2.3,14 . 80 \times 10^6 . 39 p \times 10^{-12}$$
$$= 99,98\ \Omega$$

$$R_{Total} = R_P \,//\, R_{LP} \,//\, R_{CP} = 90,91 \,//\, 250,1 \,//\, 99,98 = 39,99\ \Omega \approx 40\ \Omega$$

$$Q = \frac{40}{2.3,14 . 80 \times 10^6 \times 9,95 \times 10^{-9}} = 8$$

$$BW = \frac{f_c}{Q} = \frac{80 \times 10^6}{8} = 10\ MHz$$