i) $R = 100 \times 10^3 \Omega$ $L = 20 \times 10^{-3}$ H $C = 5 \times 10^{-9}$ F

$$\omega_0 = \frac{1}{\sqrt{LC}} = \frac{1}{\sqrt{20 \times 10^{-3} \times 5 \times 10^{-9}}}$$

$$\omega_0 = 100000 \text{ rad/s} = 100K \text{ rad/s}$$

$$Q = \frac{R}{\omega_0 L} = \frac{100 \times 10^3}{100000 \times 20 \times 10^{-3}} = 50$$

$$B = \frac{\omega_0}{Q} = \frac{100000}{50} = \frac{2000}{1} = 2000 \text{ rad/s}$$

$$\omega_1 = \omega_0 - \frac{B}{2} = 100{,}000 - \frac{2000}{2}$$

$$= 99{,}000 = 99K \text{ rad/s}$$

$$\omega_2 = \omega_0 + \frac{B}{2} = 100000 + \frac{2000}{2}$$

$$= 101000 = 101K \text{ rad/s}$$

ii) $C = 0.1$ F $R = 10\Omega$ $L = 2$ H

$$\omega_0 = \frac{1}{\sqrt{LC}} = \frac{1}{\sqrt{2 \times 0.1}}$$

$$= 2.2 \text{ rad/s}$$

iii) $\omega_0 = \frac{1}{\sqrt{LC}}$

$L = 100 \times 10^{-3} H \quad C = 0.5 \times 10^{-3} f$

$\omega_0 = \frac{1}{\sqrt{100 \times 10^{-3} \times 0.5 \times 10^{-3}}}$

$= 141.4 \text{ rad/s}$