

In a series LCR resonance circuit, if we change the resistance only, from a lower to higher value :

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- A The bandwidth of resonance circuit will increase.
- B The resonance frequency will increase.
- C The quality factor will increase.
- D The quality factor and the resonance frequency will remain constant.

3.

Option (a) As bandwidth  $\propto R$  ( $\because \Delta\omega = \frac{R}{2L}$ )

(✓)  $\Rightarrow$  As  $R \uparrow$ , bandwidth also  $\uparrow$ .

Option (b) Resonance frequency is independent

(X) of  $R$ . So, doesn't  $\uparrow$  on increasing the value of  $R$ . ( $\because \omega = \frac{1}{\sqrt{LC}}$ )

Option (c) As  $Q \propto \frac{1}{R}$  ( $\because Q = \frac{L}{R} \sqrt{\frac{L}{C}}$ )

(X)  $\Rightarrow$  As  $R \uparrow$ ,  $Q \downarrow$ .

Option (d) As we have seen in above options,

(X)  $Q \downarrow$  and ' $\omega$ ' remains constant.