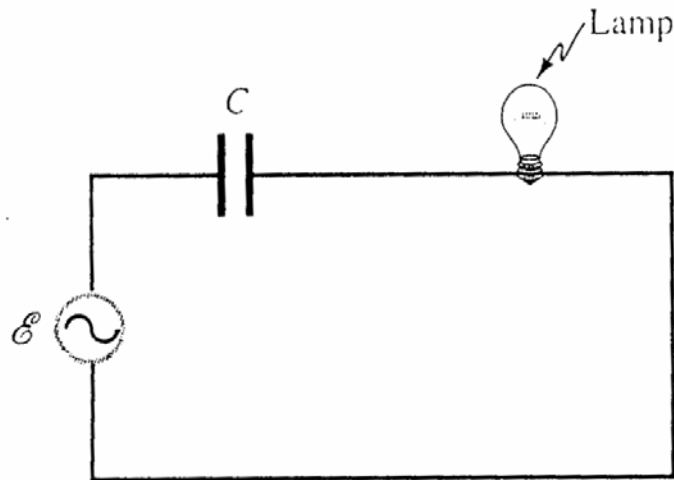


1. A capacitor and a lamp are connected in series with an AC generator of constant voltage but variable frequency



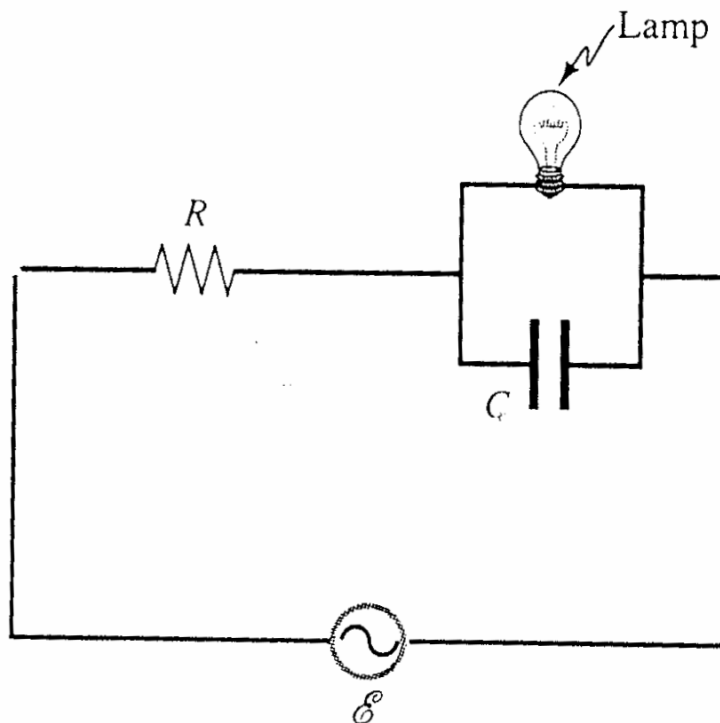
Which of the following three statements is true?

The lamp will 1. not light, because the capacitor is connected in series with the lamp; 2. burn brightest when the frequency is high; 3. burn with the same brightness for all frequencies.

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The capacitor's reactance $V_0/I_0 = X_C = (\omega C)^{-1}$ goes to zero as frequency ω gets high, so the capacitor conducts high frequency ac current very well.

2. A capacitor, lamp, and resistor are connected to an AC generator of constant voltage but variable frequency



Which of the following statements is true? The lamp will 1. not burn, because the capacitor shorts out the lamp; 2. burn brightest when the frequency is low; 3. burn brightest when the frequency is high ; 4. burn with the same brightness for all frequencies.

Which of the following statements is true? The lamp will 1. not burn, because the capacitor shorts out the lamp; 2. burn brightest when the frequency is low; 3. burn brightest when the frequency is high ; 4. burn with the same brightness for all frequencies.

When the frequency is low the capacitor has a high reactance so almost all the current goes through the lamp. When the frequency is high most of the current goes through the capacitor since then the capacitor conducts well.