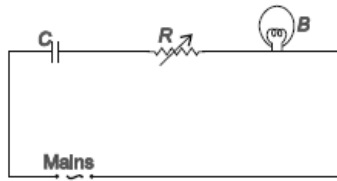


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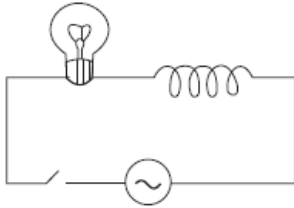
ASSIGNMENT

CLASS XII PHYSICS

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- 21 In a series LCR circuit, X_L , X_C and R are the inductive reactance, capacitive reactance and resistance respectively at a certain frequency f . If the frequency of ac is doubled, what will be the values of reactances and resistance of the circuit? 1
- 22 In a series $L-R$ circuit, $X_L = R$ and power factor of the circuit is P_1 . When a capacitor with capacitance C such that $X_L = X_C$ is put in series, the power factor becomes P_2 . Find P_1/P_2 . 1
- 23 How does an inductor behave in an ac circuit at very high frequency? 1
- 24 Why are the divisions marked on the scale of an ac ammeter not equally spaced? 1
- 25 What is the average value of ac over a cycle? 1
- 26 Show that the current leads the voltage in phase by $\pi/2$ in an ac circuit containing an ideal capacitor. 1
- 27 A capacitor C , a variable resistor R and a bulb B are connected in series to the ac mains in circuit as shown. The bulb glows with some brightness. How will the glow of the bulb change if (i) a dielectric slab is introduced between the plates of the capacitor, keeping resistance R to be the same; (ii) the resistance R is increased keeping the same capacitance? 1



- 28 Determine the average value of a.c over a (i) half cycle and (ii) full cycle. 1
- 29 An electric heater is heated first using dc and then using ac such that the potential difference across the heater is same in both cases. In which case is more heat produced? 1
- 30 A light bulb and an open coil inductor are connected to an ac source through a key as shown in the figure. 1



The switch is closed and after sometime, an iron rod is inserted into the interior of the inductor. The glow of the light bulb (a) increases; (b) decreases; (c) is unchanged, as the iron rod is inserted. Give your answer with reason. What will be your answer if ac source is replaced by a dc source?