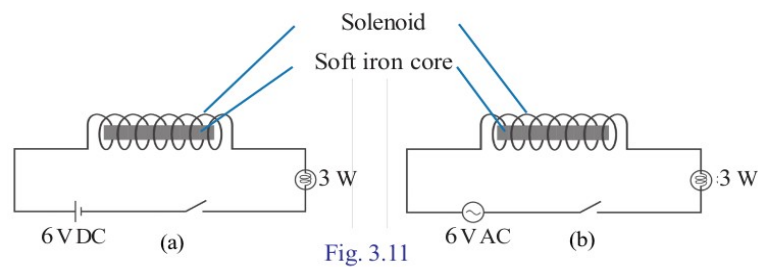




3 Electromagnetic Induction

Self Induction



Let's examine the above experiments. The bulb in the circuit glows when the circuit is kept switched on.

- In which circuit does the bulb give a light with low intensity?
 - * Second circuit(b)
- In which circuit is a magnetic field developed around the solenoid?
 - * On both circuit
- In which circuit is a varying magnetic field developed around the solenoid?
 - * Second circuit(b)
- If so in which circuit is a continuous emf induced?
 - * On Second circuit(b)
- Why does the intensity of light decrease in that circuit?
 - * Back emf more
- What is this phenomenon? Explain.
 - * Self induction

→ The change in magnetic flux due to the flow of an AC in a solenoid will generate a back emf in the same solenoid in a direction opposite to that applied to it. This phenomenon is known as the self induction.

- Have you understood the reason behind the decrease in the intensity of light in the second circuit?
 - * When AC passes through a solenoid, a changing magnetic field is generated around it. Due to this an induced emf is generated inside the solenoid. This induced emf is in a direction opposite to that applied on the coil. Hence this is a back emf. This back emf reduces the effective voltage in the circuit.

Inductor

→ Inductor is a device which works on the principle of self Induction.



→ An inductor is an insulated copper wire wound in a helical shape.

→ Inductors are coils used to oppose the changes in electric current in a circuit. They are used to reduce current in a circuit to the desired value without loss of power.

→ Inductors are widely used in AC circuits. Why?

* Inductors are used in the electronic circuits, to control and decrease current without power loss.

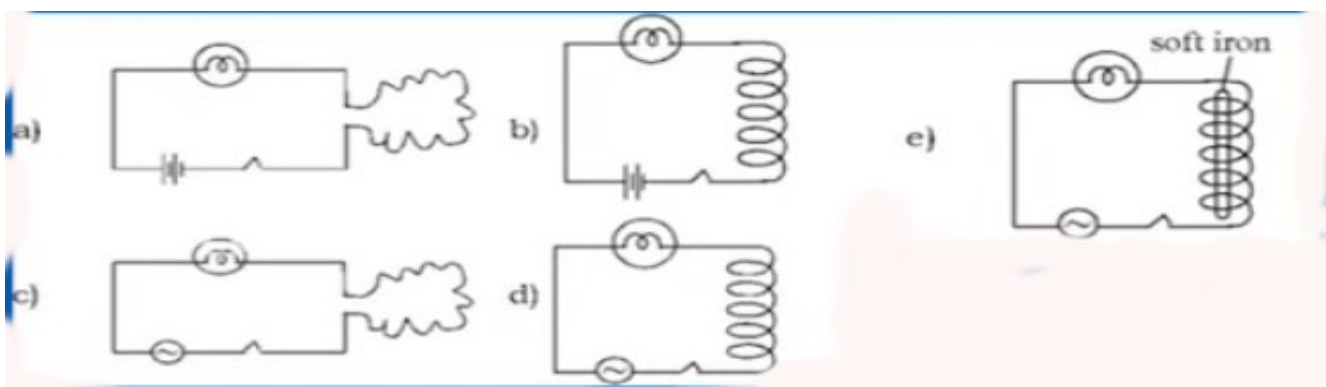
→ If resistors are used instead of inductors, what will be the disadvantage?

* Electrical energy is lost in the form of heat.

→ Inductors are not used in DC circuits. Find out the reason?

* Back emf is not produced as the flux formed by the current has no variation. So current control by inductor in DC is not possible.

Assignment



a) Compare the light intensity of the bulbs.

b) What is the phenomenon due to which the intensity of the bulb decreases?