30 Lecture - PHY101

Important Mcqs

When a magnet is moved towards a coil of wire, an induced current is produced. What is the direction of the induced current?

A) In the opposite direction to the motion of the magnet

B) In the same direction as the motion of the magnet

C) In a direction perpendicular to the motion of the magnet

D) The direction depends on the strength of the magnet

Answe**r: A) In the opposite direction to the motion of the magnet**

Faraday's law of electromagnetic induction relates which of the following quantities?

A) Electric field and magnetic field

B) Electric field and time-varying magnetic field

C) Magnetic field and time-varying electric field

D) Magnetic field and current

Answer: B) Electric field and time-varying magnetic field

A transformer is a device used to:

A) Store electrical energy

B) Increase or decrease voltage levels in a circuit

C) Convert AC to DC

D) Convert DC to AC

Answer: B) Increase or decrease voltage levels in a circuit

Lenz's law states that:

A) The magnitude of the induced emf is proportional to the rate of change of magnetic field

B) The direction of the induced emf is in the same direction as the change in magnetic field

C) The direction of the induced emf is opposite to the change in magnetic field

D) The direction of the induced emf is perpendicular to the magnetic field

Answer: C) The direction of the induced emf is opposite to the change in magnetic field

Which of the following is not a way to induce an electromotive force in a conductor?

A) Moving a magnet near a conductor

B) Moving a conductor near a magnet

C) Changing the electric field near a conductor

D) Changing the magnetic field near a conductor

Answer: C) Changing the electric field near a conductor

The primary coil of a transformer is connected to a 120 V AC power source. If there are 200 turns in the primary coil and 400 turns in the secondary coil, what is the voltage across the secondary coil?

A) 60 V

B) 120 V

C) 240 V

D) 480 V

Answer: C) 240 V

Which of the following is a measure of the strength of an induced electric field?

A) Resistance

B) Capacitance

C) Magnetic flux

D) Inductance

Answer: D) Inductance

An induced current is produced in a coil of wire when:

A) A magnetic field is applied to the coil

B) The coil is connected to a battery

C) The coil is moved through a magnetic field

D) A static magnetic field is present in the vicinity of the coil

Answer: C) **The coil is moved through a magnetic field**

A metal rod is moved perpendicular to a magnetic field with a velocity of 5 m/s. The rod has a length of 0.2 m and a resistance of 2 ohms. If the magnetic field has a strength of 0.3 T, what is the magnitude of the induced emf?

A) 0.6 V

B) 1.0 V

C) 3.0 V

D) 6.0 V

Answer: A) 0.6 V

What is the purpose of a commutator in a DC motor?

A) To convert AC to DC

B) To increase the speed of the motor

C) To reverse the direction of the current in the motor

D) To increase the efficiency of the motor

Answer: C) To reverse the direction of the current in