

Unit 2: Magnetic Induction

TRUE/FALSE

1. The polarity of the induced voltage is determined by the polarity of the magnetic field in relation to the direction of movement.

ANS: T PTS: 1 REF: Magnetic Induction

2. The important factors concerning magnetic induction are a magnetic field, movement, and polarity.

ANS: F PTS: 1 REF: Moving Magnetic Fields

3. If a conductor cuts magnetic lines of flux at a rate of 1 V, a voltage of 1 Wb/s will be induced.

ANS: F PTS: 1 REF: Determining the Amount of Induced Voltage

4. The induced voltage is proportional to the rate of change of current (speed of the cutting action).

ANS: T PTS: 1 REF: Rise Time of Current in an Inductor

5. The exponential curve describes a rate of certain occurrences and is divided into four time constants.

ANS: F PTS: 1 REF: The Exponential Curve

6. The exponential curve can often be found in nature.

ANS: T PTS: 1 REF: The Exponential Curve

7. Inductance is measured in units called the henry and is represented by the letter H .

ANS: F PTS: 1 REF: Inductance

8. The time necessary for current in an inductor to reach its full Ohm's law value, called the R-L time constant, can be computed using the formula $L = H / R$.

ANS: F PTS: 1 REF: Inductance

9. A device that can be used for spike suppression in either direct- or alternating-current circuits is the metal oxide varistor (MOV).

ANS: T PTS: 1 REF: Induced Voltage Spikes

10. A device that uses the collapsing magnetic field of an inductor to produce a very low voltage is the electric-fence charger.

ANS: F PTS: 1 REF: Induced Voltage Spikes

MULTIPLE CHOICE

1. The principle of magnetic ____ states that whenever a conductor cuts through magnetic lines of flux, a voltage is induced into the conductor.

- a. induction
- b. conduction
- c. reduction
- d. fluctuation

ANS: A PTS: 1 REF: Magnetic Induction

2. Three factors determine the amount of voltage that will be induced in a conductor: the number of turns of wire, the strength of the magnetic field (flux density), and the ____ of the cutting action.
- a. speed
 - b. movement
 - c. intensity
 - d. direction

ANS: A PTS: 1 REF: Determining the Amount of Induced Voltage

3. In magnetic measurement, ____ lines of flux are equal to one weber (Wb).
- a. 100,000
 - b. 1,000,000
 - c. 10,000,000
 - d. 100,000,000

ANS: D PTS: 1 REF: Determining the Amount of Induced Voltage

4. When a resistive load is suddenly connected to a source of direct current, the current will instantly ____.
- a. drop to its minimum value
 - b. rise to its maximum value
 - c. become erratic
 - d. stop flowing

ANS: B PTS: 1 REF: Rise Time of Current in an Inductor

5. Each time constant in an exponential curve is equal to ____% of some value.
- a. 20.0
 - b. 25.0
 - c. 33.3
 - d. 63.2

ANS: D PTS: 1 REF: The Exponential Curve

6. A coil has an inductance of one ____ when a current change of one ampere per second results in an induced voltage of one volt.
- a. david
 - b. henry
 - c. weber
 - d. paul

ANS: B PTS: 1 REF: Inductance

7. Iron-core inductors cannot be used for high-frequency applications because of ____ loss and hysteresis loss in the core material.
- a. electrical current
 - b. phosphoresis
 - c. polarity
 - d. eddy current

ANS: D PTS: 1 REF: Inductance

8. A(n) ____ occurs when the current flow through an inductor stops, and the current decreases at an exponential rate also.
- a. voltage jolt
 - b. amp spike
 - c. wattage jolt
 - d. voltage spike

ANS: D PTS: 1 REF: Induced Voltage Spikes

9. A device often used to prevent induced voltage spikes when the current flow through an inductor is stopped is the ____.
- a. closed switch
 - b. diode
 - c. electrode
 - d. iron-core inductor

ANS: B

PTS: 1

REF: Induced Voltage Spikes

10. A(n) ____ diode has a forward voltage drop of approximately 0.7 V regardless of the current flowing through it.
- a. MOV
 - b. iron
 - c. oxide
 - d. silicon

ANS: D

PTS: 1

REF: Induced Voltage Spikes