Inductors Quiz PDF

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What is the primary function of an inductor in an electrical circuit?

- ◯ Store energy in an electric field
- ◯ Store energy in a magnetic field
- ◯ Convert AC to DC
- ◯ Amplify signals

Describe the impact of frequency on the performance of an inductor in an AC circuit.

- ◯ Frequency has no impact on inductors.
- ◯ Higher frequency increases reactANCE.
- ◯ Lower frequency increases reactANCE.
- ◯ Frequency only affects resistors.

Discuss the differences between self-inductANCE and mutual inductANCE.

- ◯ Self-inductANCE is always greater than mutual inductANCE.
- ◯ Self-inductANCE is the property of an inductor to induce voltage across itself.
- ◯ Mutual inductANCE only occurs in coils of the same size.
- ◯ Self-inductANCE and mutual inductANCE are the same.

How does the core material of an inductor affect its inductANCE and efficiency?

- ◯ Core material has no effect on inductANCE.
- ◯ Core material affects magnetic permeability.
- ◯ All core materials are equally effective.
- ◯ Core material only affects resistance.

What are the practical considerations when designing an inductor for a high-frequency application?

- ◯ High-frequency inductors require larger cores.
- ◯ Minimizing parasitic elements is crucial.

- ◯ High-frequency inductors are less efficient.
- ◯ Core material is irrelevant at high frequencies.

Explain the concept of saturation in inductors and its effect on circuit performance.

- ◯ Saturation increases inductANCE.
- ◯ Saturation leads to reduced inductANCE.
- ◯ Saturation has no effect on performance.
- ◯ Saturation only occurs in air-core inductors.

What is the main cause of core losses in an inductor?

- ◯ Copper losses
- ◯ Hysteresis and eddy currents
- ◯ Thermal expansion
- ◯ Electrical resistance

Which type of inductor is adjustable?

- ◯ Fixed inductor
- ◯ Variable inductor
- ◯ Choke coil
- ◯ Air core inductor

What happens to the inductIVE reactANCE as the frequency of the AC signal increases?

- ◯ It decreases
- ◯ It remains constant
- ◯ It increases
- ◯ It becomes zero

Which of the following are types of inductor cores? (Select all that apply)

- ☐ Air core
- ☐ Iron core
- ☐ Copper core
- ☐ Ferrite core

In which application are inductors commonly used to smooth out voltage ripples?

- ◯ Oscillators
- ◯ Filters
- ◯ Amplifiers
- ◯ Rectifiers

Explain how an inductor stores energy in a magnetic field.

- ◯ The energy is stored in an electric field.
- ◯ The energy is stored in a magnetic field.
- ◯ The energy is lost as heat.
- ◯ The energy is converted to light.

What factors affect the inductANCE of a coil? (Select all that apply)

- ☐ Number of turns
- ☐ Core material
- ☐ Wire thickness
- ☐ Length of the coil

What are the typical losses associated with inductors? (Select all that apply)

- ☐ Copper losses
- ☐ Core losses
- ☐ Dielectric losses
- ☐ Thermal losses

Which characteristics define a high-quality inductor? (Select all that apply)

- ☐ High Q factor
- ☐ Low resistance
- ☐ High core losses
- ☐ High inductANCE stability

What are the consequences of parasitic inductances in circuits? (Select all that apply)

- ☐ Increased efficiency
- ☐ Signal distortion
- ☐ Reduced performance at high frequencies
- ☐ Enhanced signal clarity

Which unit is used to measure inductANCE?

- ◯ Ohm
- ◯ Farad
- ◯ Henry
- ◯ Watt

Which applications commonly use inductors? (Select all that apply)

- ☐ Transformers
- ☐ Capacitors
- ☐ Filters
- ☐ Oscillators

Which symbol is commonly used to represent an inductor in circuit diagrams?

- ◯ A zigzag line
- ◯ A straight line
- ◯ A coil
- ◯ A triangle

What type of core is typically used in high-frequency inductors?

- ◯ Iron core
- ◯ Air core
- ◯ Ferrite core
- ◯ Steel core