Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

**Inductive Reactance Exam**

**Match the terms with their correct definitions.**

|  |  |  |
| --- | --- | --- |
| 1. |  Resistance | **A** Opposition to current caused by voltage or current changes not |
|  |  | resulting in energy dissipation. |
| 2. |  Impedance | **B** The rate of change of cyclical motion. |
| 3. |  Reactance | **C** Opposition to current resulting in energy dissipation. |
| 4. |  Inductive reactance | **D** Opposition to current including both resistance and reactance. |
| 5. |  Angular velocity | **E** Circuit opposition caused by inductance. |

**Match the terms with their correct definitions.**

|  |  |  |
| --- | --- | --- |
|  6. |  Power | **A** The product of volts and amperes in an AC circuit. |
|  7. |  Reactive power | **B** The ratio of true power to apparent power in an AC circuit. |
|  8. |  Apparent power | **C** The product of reactive voltage and amperes in an AC circuit. |
|  9. |  Power factor | **D** The angle that the current leads or lags the voltage in anAC circuit. |
|  10. Phase angle | **E** The rate of energy consumption in a circuit. |

**Match the symbols with their correct definitions.**

|  |  |  |
| --- | --- | --- |
| 11. |  XL | **A** Impedance |
| 12. |  VARS | **B** Frequency in hertz |
| 13. |  Z | **C** Angular velocity in radians per second |
| 14. |  f | **D** Reactive apparent power |
| 15. |  ω | **E** Inductive reactance in ohms |

**Match the symbols with their correct definitions**

|  |  |  |
| --- | --- | --- |
| 16. |  X | **A** Radians in one cycle |
| 17. |  PF | **B** | Reactance in ohms |
| 18. |  R | **C** | Power factor |
| 19. |  2π | **D** Resistance in ohms |

1. Which of the following is not a factor used to compute inductive reactance?

**A** 2π- reactive apparent power

**B** ω- angular velocity

**C** L– inductance

**D** f- frequency

1. Which of the following statements is ***false*** concerning current and voltage relationships in RL circuits?

**A** Current lags voltage by 90º in a pure inductive circuit.

**B** Current and voltage are in phase in a pure inductive circuit.

**C** Current and voltage are in phase in a pure resistive circuit.

**D** Current lags voltage between 0º and 90º in an RL circuit, depending upon relative amounts ofRandL present and frequency of applied voltage or current.

1. Which of the following statements is ***true*** concerning the formula for computing inductive reactance?

**A** ω L

**B** 2π f L

**C** Both of the above

**D** None of the above

1. Which of the following statements is ***true*** concerning inductive time constants?

**A** n theRLcircuit connected to DC, the current immediately rises to the Ohm’s law value when switchis closed.

**B** The time required for current to reach maximum value varies inversely with inductance in

henries.

**C** One-time constant equalsL/R.

**D** One-time constant equalsXL/ R.

1. Which of the following statements is *false* concerning inductive time constants?

**A** The time required for current to reach maximum value varies inversely with resistance in ohms**.**

**B** During each time constant, the current rises (or fails) 63.2 percent of the value remaining.

**C** During each time constant, the current rises (or falls) 36.8 percent of the value remaining**.**

**D** During the universal time constant, voltage acts inversely to current.

**Match the indicated value to the lettered blank on the universal time constant chart.**



1. 98.2
2. 63.2
3. Inductor current rising
4. 36.8
5. 1.8



1. What is the percentage for curve A, at 2TC?

**A** 95%

**B** 5%

**C** 86.5%

**D** 13.5%

1. What is the percentage for curve B, at 2TC?

**A** 95%

**B** 5%

**C** 86.5%

**D** 13.5%

1. What is the percentage for curve B, at 4TC?

**A** 98%

**B** 2%

**C** 100%

**D** 0%

1. What is the percentage for curve B, at 1TC?

**A** 36.8%

**B** 63.2%

**C** 50%

**D** 86.5%

1. Curve A of the universal time constant chart is called which of the following?

**A** rising curve

**B** inductor current rising

**C** capacitor voltage

**D** all of the above