**Inductive Reactance Exam Answer Key**

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

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

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

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

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

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

**Match the symbols with their correct definitions**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 16. | X | **B** | **A** Radians in one cycle | |
| 17. | PF | **C** | **B** | Reactance in ohms |
| 18. | R | **D** | **C** | Power factor |
| 19. | 2π | **A** | **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 anRLcircuit, 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** Neither of the above

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

**A** In the RL circuit 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 equals L/R**

**D** One-time constant equals XL/ R

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

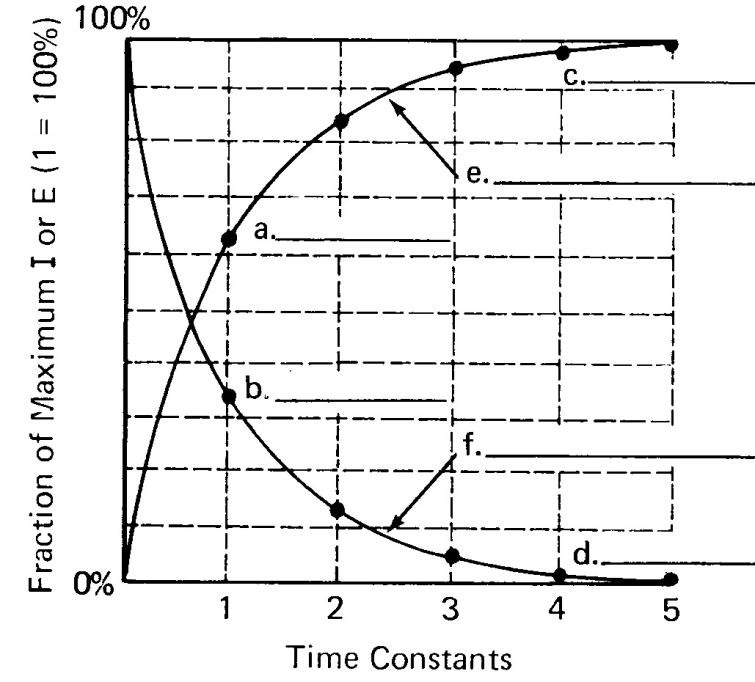
**A** The time required for current to reach maximum value varies inversely with resistance in ohms

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

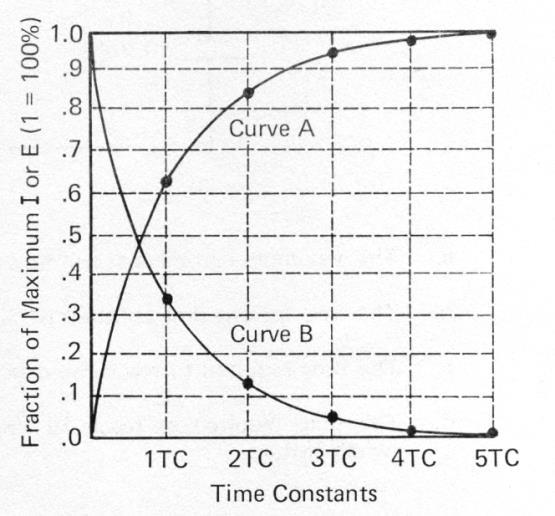
**C During each time constant, the current rises (or falls) 36.8 percent of the value remaining**

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

**Match the numbered label to the lettered blank on a universal time constant chart.**



|  |  |  |
| --- | --- | --- |
| 25. | 98.2 | **C** |
| 26. | 63.2 | **A** |
| 27. | Inductor current rising | **E** |
| 28. | 36.8 | **B** |
| 29. | 1.8 | **D** |



**Answer the following questions using the Universal Time Constant Chart above.**

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%

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

**A 36.8%**

**B** 63.2%

**C** 50%

**D** 86.5%

28. 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**