

- 18) If a  $0.05 \mu\text{F}$  and  $0.1 \mu\text{F}$  capacitor are connected in parallel across a  $20 \text{ V}$  source, the total capacitance equals \_\_\_\_\_ and each capacitor drops \_\_\_\_\_. 18) \_\_\_\_\_  
 A)  $0.10 \mu\text{F}$ ,  $20 \text{ V}$       B)  $0.05 \mu\text{F}$ ,  $15 \text{ V}$       C)  $0.15 \mu\text{F}$ ,  $10 \text{ V}$       D)  $0.15 \mu\text{F}$ ,  $20 \text{ V}$
- 19) If a  $1 \mu\text{F}$ ,  $2.2 \mu\text{F}$  and  $0.05 \mu\text{F}$  capacitor are connected in series,  $C_T$  is less than \_\_\_\_\_. 19) \_\_\_\_\_  
 A)  $1 \mu\text{F}$       B)  $2.2 \mu\text{F}$       C)  $0.001 \mu\text{F}$       D)  $0.05 \mu\text{F}$
- 20) If an uncharged capacitor, a resistor, a switch and a  $12 \text{ V}$  battery are connected in series, at approximately what time will the capacitor reach full charge? 20) \_\_\_\_\_  
 A)  $R \times C$       B)  $12 \times R \times C$   
 C)  $5 \times R \times C$       D) The time cannot be predicted.
- 21) At what frequency is a  $0.001 \mu\text{F}$  capacitor operating if its reactance is  $45 \text{ k}\Omega$ ? 21) \_\_\_\_\_  
 A)  $354 \text{ kHz}$       B)  $3.54 \text{ kHz}$       C)  $35.4 \text{ kHz}$       D)  $3.54 \text{ MHz}$

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 22) A high-pass filter passes high frequencies and blocks low frequencies. 22) \_\_\_\_\_

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

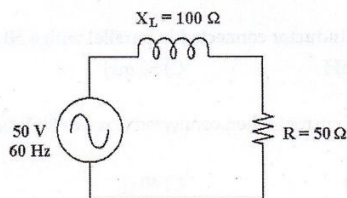


Figure 12-1

- 23) If the operating frequency decreases in Figure 12-1, the current \_\_\_\_\_. 23) \_\_\_\_\_  
 A) remains the same      B) decreases  
 C) decreases to zero      D) increases

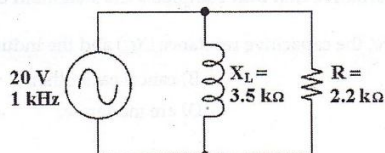


Figure 12-2

- 24) If the resistance increases in Figure 12-2, the total current \_\_\_\_\_. 24) \_\_\_\_\_  
 A) remains the same      B) decreases  
 C) increases      D) decreases to zero

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 25) When a DC voltage is first applied to an inductor, the initial circuit current is zero. 25) \_\_\_\_\_
- 26) Inductors in series or parallel combine just like resistors in series or parallel. 26) \_\_\_\_\_

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 27) If a 25 mH inductor drops 50 V while operating at 400 Hz, what is  $X_L$ ? 27) \_\_\_\_\_  
A) 62.8  $\Omega$                       B) 62.8 k $\Omega$                       C) 628  $\Omega$                       D) 6.28 k $\Omega$
- 28) The time constant for an inductor for each time period is: 28) \_\_\_\_\_  
A) 63% of the increase in value.                      B) a constant factor.  
C) 37% of the decrease in value.                      D) all of these.
- 29) What is the reactance of an inductor that carries 1.25 mA<sub>P</sub> and drops 25 V<sub>P</sub> at 100 Hz? 29) \_\_\_\_\_  
A) 20 k $\Omega$                       B) 15.7 k $\Omega$                       C) 31.25  $\Omega$                       D) 3.125 k $\Omega$
- 30) What is the inductive reactance of an inductor that drops 12 V<sub>RMS</sub> and carries 50 mA<sub>RMS</sub>? 30) \_\_\_\_\_  
A) 6  $\Omega$                       B) 240  $\Omega$                       C) 600  $\Omega$                       D) 60  $\Omega$
- 31) What is the inductance of a 20 mH inductor connected in parallel with a 50 mH inductor? 31) \_\_\_\_\_  
A) 14.29 mH                      B) 20 mH                      C) 50 mH                      D) 70 mH
- 32) If an inductor carries 100 mA<sub>DC</sub> of current when connected across a 30 V<sub>DC</sub> source, then what is its resistance? 32) \_\_\_\_\_  
A) 0  $\Omega$                       B) 30  $\Omega$                       C) 60  $\Omega$                       D) 300  $\Omega$

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 33) The total inductance of two parallel inductors equals the sum of their inductance values. 33) \_\_\_\_\_
- 34) The voltage and current are in phase in an inductive circuit. 34) \_\_\_\_\_

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 35) In a series AC circuit at resonance, the capacitive reactance ( $X_C$ ) and the inductive reactance ( $X_L$ ): 35) \_\_\_\_\_  
A) add to each other.                      B) cancel each other.  
C) are minimum.                      D) are moderate.
- 36) The output voltage of a circuit at 70.7% of its maximum level measured in dB is: 36) \_\_\_\_\_  
A) 7 dB.                      B) 3 dB.                      C) -7 dB.                      D) -3 dB.

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 37) A step-down transformer could have a primary-secondary turns ratio of 4:1. 37) \_\_\_\_\_
- 38) A typical transformer fault would be an open winding. 38) \_\_\_\_\_

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

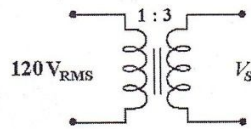


Figure 14-1

- 39) In Figure 14-1, the primary secondary turns ratio is changed to 2.5:1 and the secondary current equals 100 mA. What is the reflected resistance seen by the primary? 39) \_\_\_\_\_
- A) 2.5 k $\Omega$                       B) 5 k $\Omega$                       C) 3 k $\Omega$                       D) 1.2 k $\Omega$

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 40) A transformer can be used as an impedance matching device. 40) \_\_\_\_\_

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 41) When a 1 k $\Omega$  load resistor is connected across the secondary winding of a transformer with a turns ratio of 1:2, the source "sees" a reflected load of \_\_\_\_\_. 41) \_\_\_\_\_
- A) 250  $\Omega$                       B) 1 k $\Omega$                       C) 4 k $\Omega$                       D) 2 k $\Omega$

- 42) Transformers \_\_\_\_\_. 42) \_\_\_\_\_
- A) convert a lower current into a higher current  
 B) match the impedance of a source to the impedance of a load  
 C) convert a higher voltage into a lower voltage  
 D) all of these

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 43) Only the number of turns in the primary and secondary of a transformer determines the actual secondary voltage. 43) \_\_\_\_\_
- 44) Autotransformers cannot be used for isolation purposes since there is only one winding. 44) \_\_\_\_\_

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 45) When the turns ratio of a transformer is 1:10 and the primary AC voltage is 6 V, then the secondary voltage is \_\_\_\_\_. 45) \_\_\_\_\_
- A) 6 V                      B) 60 V                      C) 0.6 V                      D) 36 V
- 46) When a 1 k $\Omega$  load resistor is connected across the secondary winding of a transformer with a turns ratio of 2:1, the source "sees" a reflected load of \_\_\_\_\_. 46) \_\_\_\_\_
- A) 4 k $\Omega$                       B) 2 k $\Omega$                       C) 500  $\Omega$                       D) 1 k $\Omega$

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 47) An ideal transformer has no power loss. 47) \_\_\_\_\_
- 48) A transformer with a turns ratio of 1:7 is a step down transformer. 48) \_\_\_\_\_