ELT 101: Basic Electricity: AC/DC

Unit 13 Exam: Inductance and inductive circuits

NAME_____

DATE _____

Circle the most correct answer (2 points each for a total of 20 points)

1) An inductor stores electrical energy in the form of a(n) _____ field, just as a capacitor stores electrical energy in the form of a(n) _____ field.

A. electric, magnetic

B. magnetic, electric

2) Inductors oppose changes in:

A. current

B. voltage

C. resistance

D. inductance

3) The total inductance of a series circuit is:

A. less than the value of the smallest inductor

B. equal to the sum of the individual inductors

C. equal to the product over the sum

D. all of the above

4) The total inductance of a parallel circuit is calculated by:

A. using the product over the sum formula

B. using L divided by N for equal-value inductors

C. using the reciprocal inductance formula

D. all of the above

5) The time constant for an RL circuit is:

A. L x R

B. L/R

C. V/R

D. 2 times pi times F x L

6) Inductive reactance is proportional to:

A. time or period of the AC applied

B. frequency of the AC applied

C. the value of the inductance

D. two of the above are true

E. none of the above

7) When tested with an ohmmeter, an open coil will read:

A. zero resistance

B. infinite resistance

C. 100 to 200 ohms

D. around 1k

8) Increasing the length of coil will have what effect on the coil's inductance?

A. increase it

B. decrease it

C. length has no effect

D. depends on the frequency

9) The unit of inductance is the:

A. maxwell

B. ohm

C. tesla

D. henry

10) The unit for inductive reactance is the:

A. ohm

B. henry

C. Maxwell

D. tesla

11) Inductors are classified as either:

A. fixed or variable

B. open or closed

C. air or ferrite

D. single or polyphase

12) _____ leads _____ in a purely inductive circuit.

A. inductance, inductive reactance

B. voltage, inductance

C. current, voltage

D. voltage, current

13) How many time constants will it take for an inductor to fully develop its magnetic field?

A. two

B. three

C. four

D. five

14) Inductance and inductive reactance are basically the same.

A. true

B. false

15) You can tell if an inductor has an iron core if its schematic symbol has a pair of solid lines drawn next to the coil.

A. true

B. false

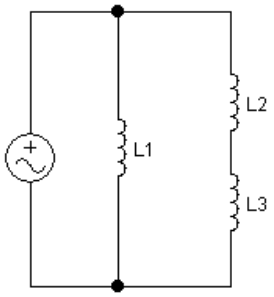
Solve the following (5 points each for a total of 20 points) **Show your work!**

1) What is the total inductance of the circuit shown?

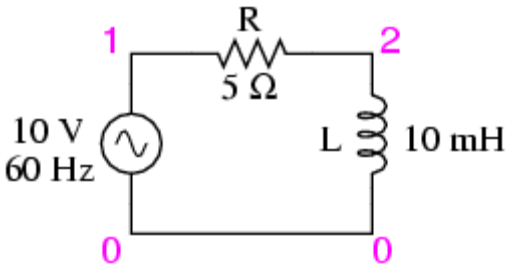
L1 = 500mH

L2 = 1H

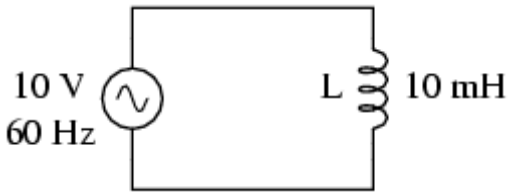
L3 = 500mH?



2) What is the time constant for the circuit shown?



3) What is the inductive reactance of the circuit shown?

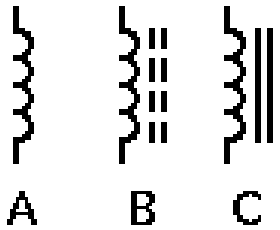


4) Identify the core type of the inductors shown at right.

A _____

B _____

C _____



Points possible:

Multiple choice/T/F:	30
Problems:	20
Total	50

***** end of unit 13 exam *****