

ELT 101: Basic Electricity: AC/DC**Unit 12 Exam: Transformers**

NAME _____

DATE _____

Circle the most correct answer (2 points each for a total of 40 points)

- 1) When using transformers in electrical power circuits, the primary purpose of the transformer is to:
 - A. step up or down DC voltage.
 - B. Step up or step down AC voltage.
 - C. Provide isolation
 - D. provide impedance matching,

- 2) Transformer cores: (choose all that are correct)
 - A. get smaller as the frequency increases
 - B. are made of aluminum
 - C. get larger as the frequency increases.
 - D. are usually laminated
 - E. get larger as the frequency decreases

- 3) A transformer can only have only one (1) secondary winding.
 - A. True
 - B. False

- 4) Coupling between the primary and secondary can be reduced by:
 - A. increasing the number of turns in the secondary
 - B. moving the primary and secondary closer together
 - C. moving the primary and secondary farther apart
 - D. using a steel core

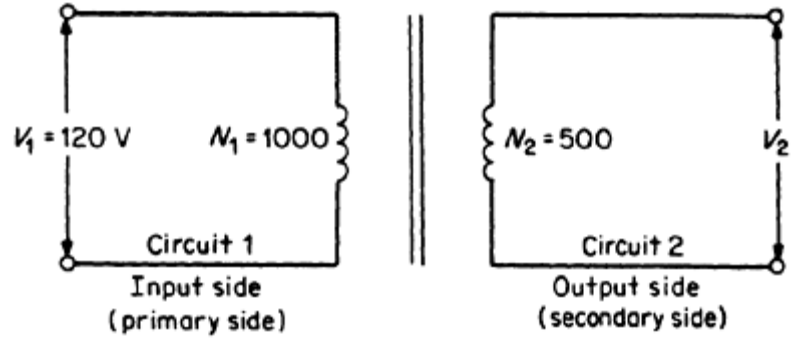
- 5) A transformer has a primary to secondary turns ratio of 2 to 1. The transformer is a step up transformer.
- A. True
 - B) False
- 6) A transformer has a 2000 turn primary and a 40 turn secondary. What is the transformer's turns ratio?
- A. 50 to 1
 - B. 1 to 50
 - C. 1 to 4
- 7) A transformer has a primary to secondary turns ratio of 5 to 1 and V_s is 5 volts. What is V primary?
- A. 5 volts
 - B. 50 volts
 - C. 1 volt
 - D. 25 volts
- 8) A transformer has 5000 primary turns, and the secondary has 500 turns. The measured primary voltage is 120 volts, and the measured output secondary voltage is 1200 volts. What can correctly be said about these results?
- A. The secondary voltage is too low
 - B. The secondary voltage is correct
 - C. The secondary voltage is too high
 - D. The transformer's primary and secondary are probably reversed
- 9) Primary to secondary turns ratio is 1:6. $I_s = 400$ mA. $I_p = ?$
- A. 2.4 A
 - B. 33 mA
 - C. 1.5 mA
 - D. 66 mA

- 10) What is copper loss in a transformer?
- A. The power loss caused by the internal resistance of the windings.
 - B. Frame loss in the transformer
 - C. The Hysteresis loss of the transformer:
 - D. Power loss caused by the transformers laminations
- 11) How do you reduce Eddy Current losses in a transformer?
- A. Use larger copper wire for the transformer windings
 - B. increase the number of secondary windings
 - C. Reduce the transformers size.
 - D. Laminate the transformers core.
- 12) Eddy current flows:
- A. in the transformers core
 - B. in the secondary copper windings
 - C. between the primary and secondary windings
 - D. in the primary copper windings,
- 13) Small dots next to the primary and secondary windings on a transformers schematic indicate:
- A. the high and low side.
 - B. what sides should be grounded.
 - C. the transformer's phase relationship
 - D. the hot side of the transformer.
- 14) An isolation transformer:
- A. isolates the output from the earth ground
 - B. normally steps up voltage.
 - C. is used to step down voltage.
 - D. eliminates static electricity

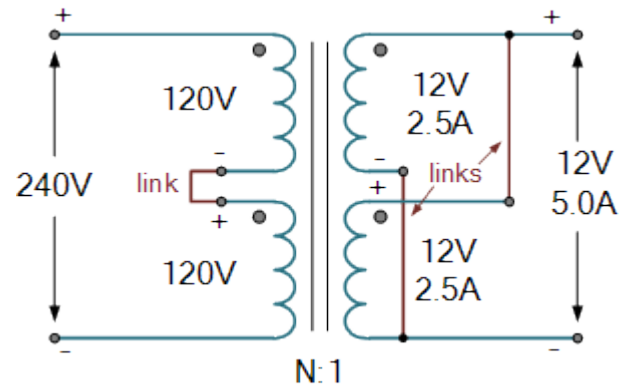
- 15) An autotransformer:
- A) has a variable core.
 - B) automatically supplies the correct voltage under load
 - C) isolates the primary side from the secondary side
 - D) only has a single winding
- 16) A transformer cannot be used to:
- A. step up or down AC voltage
 - B. step up or down a DC voltage
 - C. match impedances
 - D. transfer power from primary to secondary
- 17) The interaction between two inductors physically close to each other is called:
- A. counter EMF
 - B. self inductance
 - C. mutual inductance
 - D. hysteresis
- 18) A transformer with a primary to secondary turns ratio of 1:4 has a primary voltage of 120V. How much is the voltage in the secondary?
- A. 480VAC
 - B. 120VAC
 - C. 30VAC
 - D. this is impossible to determine
- 19) A very well made transformer can have efficiencies up to what percentage?
- A. 60%
 - B. 90%
 - C. 50%
 - D. 100%
 - E. 70%

Problems (4 points each)

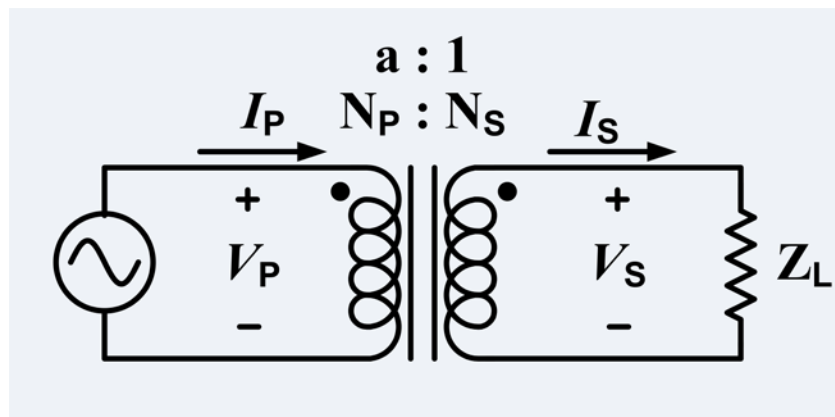
- 1) For the circuit shown, what is the output voltage?



- 2) What is the turns ratio for the transformer shown?



- 3) What is phase relationship between the primary and the secondary of the transformer shown below?



Points possible	
Multiple choice:	38
Problems	<u>12</u>
Total	50

***** end of unit 12 exam *****