

ELT 101: Basic Electricity: AC/DC**Unit 11 Exam: Alternating current**

NAME _____

DATE _____

Circle the most correct answer (1 point each for a total of 20 points)

- 1) What invention(s) helped AC win the war over DC?
 - A. telegraph
 - B. light bulb
 - C. AC generator
 - D. transformer
 - E both C and D

- 2) The most common type of alternating wave shape is the:
 - A. square wave
 - B. sine wave
 - C. rectangular wave
 - D. triangular wave

- 3) A transformer with an input of 480VAC and an output of 120VAC is a:
 - A. isolation transformer
 - B. auto-transformer
 - C. step-up transformer
 - D. none of the above

- 4) Which of the following is not a renewable power source?
 - A. coal
 - B. hydro
 - C. solar
 - D. thermal

- 5) A transformer:
- A. changes DC to AC
 - B. can increase or decrease an AC voltage
 - C. allows transmission of DC voltage
 - D. changes AC to DC
- 6) The alternating rate for AC power in the United States is:
- A. 60 volts
 - B. 50 cycles or Hertz
 - C. 120 cycles or Hertz
 - D. 60 cycles or Hertz
- 7) The process of changing AC into DC is called:
- A. transmission
 - B. stepping up
 - C. transforming
 - D. rectification
- 8) A sine wave is generated by a:
- A. AC generator
 - B. DC generator
 - C. oscilloscope
 - D. none of the above
- 9) Peak voltage may be calculated by:
- A. multiplying RMS voltage by .707
 - B. dividing RMS voltage by .707
 - C. multiplying RMS voltage by 1.414
 - D. both B and C

- 10) You measure a voltage with your multimeter. It reads 100V AC. What is the peak to peak voltage?
- A. 200V
 - B. 283V
 - C. 141V
 - D. 400V
- 11) Your PC power supply has a label that states that it can work on 100-240 volts at 50-60 Hertz. The 100-240 volts is stated in:
- A. peak to peak voltage
 - B. RMS voltage
 - C. average voltage
 - D. peak voltage
- 12) In a 60 Hz circuit, AC voltage changes polarity:
- A. 60 times a second
 - B. every 360 degrees
 - C. 120 times a second
 - D. every 90 degrees
- 13) When generating AC voltage, the generators armature must:
- A. only move horizontally
 - B. only move vertically
 - C. stay stationary
 - D. move or cut flux lines
- 14) Alternators are:
- A. used to power a company's generator plant
 - B. DC generators
 - C. used to generate AC voltage in your car
 - D. used to generate DC voltage in your car

- 15) A wave has a period of 400mS. What is the frequency of the wave?
- A. 2.5KHz
 - B. 250 Hz
 - C. 25KHz
 - D. 2.5Hz
- 16) A wave has a frequency of 35KHz. What is its period?
- A. 28.6 mS
 - B. 2.86 uS
 - C. 2.86 mS
 - D. 28.6 uS

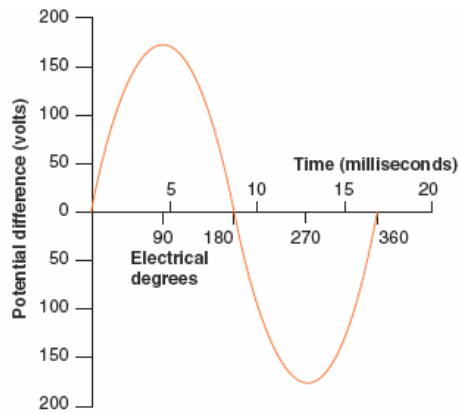
Match the term to its definition (1 point each for a total of 10 points)

- | | | |
|----------------------|-------|---|
| A) period | _____ | difference between maximum positive and maximum negative values |
| B) hertz | _____ | rate of recurrences of a periodic wave |
| C) peak voltage | _____ | unit for frequency |
| D) phase | _____ | 70.7% of peak voltage |
| E) peak-to-peak | _____ | used for power distribution |
| F) effective voltage | _____ | same as RMS |
| G) frequency | _____ | maximum or highest amplitude value |
| H) RMS | _____ | 63.7% of peak voltage |
| I) transformer | _____ | time to complete one cycle |
| J) average voltage | _____ | angular relationship between two wave |

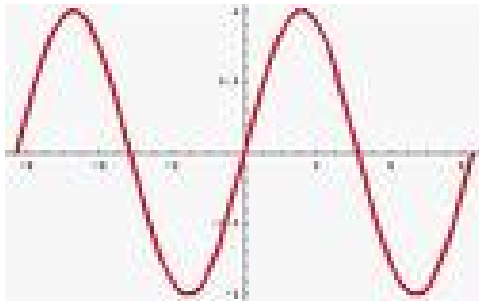
Solve the following (2 points each for a total of 8 points) Show your work!

1) What is the RMS voltage of a 130V peak-to-peak AC sine wave?

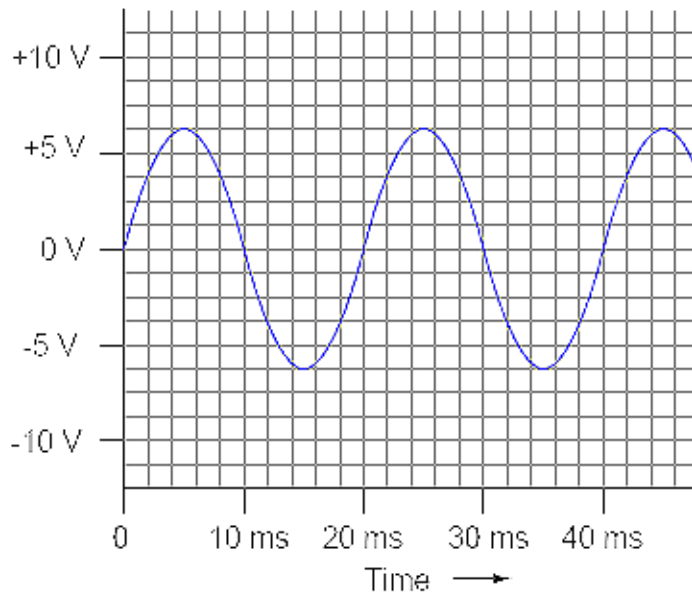
2) In the drawing below, what is the average voltage of the waveform?



3) For the display below, the combined time of both waveforms is 140 microseconds.
What is the frequency?



4) In the drawing below, what is the RMS voltage?



Points possible:

Multiple choice: 32

Matching: 10

Problems: 8

50

***** end of unit 11 exam *****