REVIEW EXERCISES

Circle the letter of the correct answer to each question.

1. What primary advantage was gained by the development of alternating current systems?

    a. Eliminated the need for large transformers.
    b. Reduced the power losses in transmission.
    c. Reduced the frequencies used in transmission.
    d. Eliminated the need for large rectifiers.

2. The amount of voltage induced in a coil is NOT dependent on which of these factors?

    a. The number of turns in the coil.
    b. The strength of the magnetic field.
    c. The size of the brushes.
    d. The angle at which the coil cuts the lines of force.

3. What conditions are necessary before two AC voltages can have a constant phase relationship?

    a. Unequal amplitudes.
    b. Equal amplitudes.
    c. Unequal frequencies.
    d. Equal frequencies.

4. What is the frequency, in Hz, of an AC voltage that has a period of 0.0001 sec?

    a. 50,000.
    b. 10,000.
    c. 5,000.
    d. 1,000.

5. How does the wave length of an AC cycle vary?

    a. Directly with amplitude.
    b. Inversely with amplitude.
    c. Inversely with frequency.
    d. Directly with frequency.

6.   What formula represents the angular distance of a rotating vector?

      a. $\theta = 2f\omega$.
      b. $\theta = \omega r$.
      c. $\theta = \omega t$.
      d. $\theta = 2ft$.

7. 2π radians represent how many degrees?

      a.   90.
      b.   180.
      c.   270.
      d.   360.

8.   What is the most commonly used power frequency?

      a.   240 Hz.
      b.   120 Hz.
      c.   112 Hz.
      d.   60 Hz.

9.   What symbol expresses the angular velocity in radians per second?

      a. 2ω F.
      b. 2π F.
      c. $2\omega\pi$ w.
      d. 2ω P.

10.   If a generator armature rotates 60 revolutions per second, how much time in fractions of a second, is necessary to rotate through $\pi/2$ radians?

      a.   1/240.
      b.   1/120.
      c.   1/80.
      d.   1/40.

11.   In a 1 MHz signal, how many complete cycles exist during a 1-sec interval?

      a.   1/10,000,000.
      b.   1/1,000,000.
      c.   10,000,000.
      d.   1,000,000.

12. What is the *average* value, in V, if the peak voltage is 120 V?

    a. 76.
    b. 82.
    c. 88.
    d. 92.

13. What is the *effective* value, in V, if the peak voltage is 240 V?

    a. 84.8.
    b. 90.
    c. 169.6.
    d. 180.

14. How are two or more out-of-phase AC voltages normally added?

    a. Arithmetically.
    b. Algebraically.
    c. Vectorially.
    d. Geometrically.

15. Root-mean-square indicates which voltage value?

    a. Average.
    b. Maximum.
    c. Instantaneous.
    d. Effective.

16. If the maximum induced output of a generator is 400 V, what is the output 90° from the reference point?

    a. 0.
    b. 100.
    c. 200.
    d. 400.

17. What is the period of an AC sine wave?

    a. Pulse repetition frequency.
    b. Pulse repetition time.
    c. Time required to complete one cycle.
    d. Time required to complete a half cycle.

18.   What unit changes electrical energy to mechanical energy?

    a.   Motor.
    b.   Generator.
    c.   Reactor.
    d.   Transformer.

19.   One AC cycle contains what number of radians?

    a.   63.7.
    b.   57.3.
    c.   9.42.
    d.   6.28.

20.   What is the frequency, in Hz, if the period of an AC voltage is 0.01 sec?

    a.   1.
    b.   10.
    c.   100.
    d.   1,000.

Recheck your answers to the Review Exercises. When you are satisfied that you have answered every question to the best of your ability, check your answers against the Exercise Solutions. If you missed five or more questions, you should retake the entire lesson, paying particular attention to the areas in which your answers were incorrect.