Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Semester 2 Exam Review

THIS REVIEW MAY NOT BE USED ON YOUR FINAL.

The practice exam includes questions on many of the topics that will be covered by your Q2 exam. Not all topics on the exam will be represented on this practice exam. Be sure to review your Post Test, Mastery Checks and unit practice To be best prepared.

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. In order to form an electric circuit, you need to have
a. wires or conductors to connect everything.
b. a power source.
c. a light bulb or some resistance.
d. a complete path for the current.
e. all of the above

____ 2. When two light bulbs are connected in series, the
a. current through each light bulb is proportional to the resistance of the bulb.
b. same amount of current always flows through each bulb.
c. neither A nor B

____ 3. As more lamps are put into a series circuit, the overall current in the circuit
a. stays the same.
b. increases.
c. decreases.

____ 4. When one light bulb in a series circuit containing several light bulbs burns out
a. none of the other bulbs will light up.
b. nothing changes in the rest of the circuit.
c. the other light bulbs burn brighter.

____ 5. Electrical devices in our homes are connected in
a. parallel.
b. series.

____ 6. Fuses and circuit breakers are used to
a. protect us.
b. prevent overloading.
c. keep wires from getting overheated.
d. break the circuit when too much current is being used.
e. all of the above

____ 7. A short circuit occurs when
a. the positive wire is connected directly to the negative wire.
b. very short wires are used in the circuit.
c. current lasts in the circuit for only a short time.
d. all of the above
e. none of the above

____ 8. A 60-W light bulb and a 100-W light bulb are both connected in parallel to a 120-V outlet. Which light bulb has more current in it?
   a. the 100-W bulb
   b. the 60-W bulb
   c. Both have the same current.

____ 9. While you are standing on the ground in your running shoes, the greatest resistance between you and the ground is in
   a. your muscles.
   b. your legs.
   c. the clothes you are wearing.
   d. your skin.
   e. the running shoes.

____ 10. Alternating current is made by
   a. alternating current and voltage.
   b. alternating the direction of voltage of the power source.
   c. huge chemical batteries.
   d. none of the above

____ 11. The current through a 5-ohm resistor connected to a 150-V power supply is
   a. 1A.
   b. 10 A.
   c. 30 A.
   d. 150 A.
   e. none of the above

____ 12. A 15-ohm resistor has a 5-A current in it. What is the voltage across the resistor?
   a. 5 V
   b. 15 V
   c. 20 V
   d. 25 V
   e. more than 25 V

____ 13. Atomic nuclei of almost all elements consist of
   a. only neutrons.
   b. protons and electrons.
   c. neutrons and electrons.
   d. only protons.
   e. protons and neutrons.

____ 14. Protons and electrons
   a. attract each other.
   b. repel each other.
   c. do not interact.

____ 15. The net charge of a nonionized atom
   a. depends only on the number of electrons it has.
   b. is zero.
   c. usually cannot be determined.
   d. depends only on the number of protons it has.

____ 16. A conductor differs from an insulator in that a conductor has
a. more protons than electrons.
b. faster-moving molecules.
c. more electrons than protons.
d. more electrons than an insulator.
e. none of the above

____ 17. An electroscope is charged positively, as shown by foil leaves that stand apart. As a negatively charged rod is brought close to the electroscope, the leaves
a. spread farther apart.
b. do not move.
c. move closer together.

____ 18. When a charged cloud passes overhead, the ground below is charged by
a. induction.
b. polarization.
c. deduction.
d. electrification.

____ 19. The charge distribution in some molecules is permanently separated into positive and negative regions. Such molecules are called
a. ionized molecules.
b. electric dipoles.
c. coulomb molecules.
d. induced molecules.
e. insulators.

____ 20. Two charged particles held near each other are released. As they move, the acceleration of each decreases. Therefore, the particles have
a. opposite signs.
b. the same sign.
c. charges that can not be determined.

____ 21. Which of these electromagnetic waves has the shortest wavelength?
a. Infrared waves
b. Light waves
c. Radio waves
d. X-rays
e. Ultraviolet waves

____ 22. The shiny surfaces of metals have most to do with
a. metals' relatively high density.
b. a resonant frequency of electrons in the metal.
c. the fact that light reflects from metals.
d. the free electrons in metal atoms.

____ 23. What is the wavelength of an electromagnetic wave that has a frequency of 1 Hz?
a. More than 1 m
b. Less than 1 m
c. 1 m

____ 24. When a virtual image is created in a plane mirror
a. the image is upright.
b. the image is located behind the mirror.
c. reflected rays diverge.
d. all of the above
e. none of the above

____ 25. A secondary rainbow is dimmer than a primary rainbow because
a. only large drops produce secondary rainbows.
b. sunlight reaching it is less intense.
c. there is an extra reflection inside the water drops.
d. it is a reflection of the primary rainbow.
e. none of the above

____ 26. When seen from an airplane, a rainbow sometimes forms a complete circle. When this happens, the plane's shadow is
a. in the center of the rainbow.
b. totally outside the rainbow.
c. in the upper part of the rainbow.
d. Nowhere. There is no shadow.
e. in the lower part of the rainbow.

____ 27. Some of a wave's energy is always being dissipated as heat. In time, this will reduce the wave's
a. frequency.
b. wavelength.
c. speed.
d. period.
e. amplitude.

____ 28. A wave travels an average distance of 6 meters in 3 seconds. What is the wave's velocity?
a. Less than 0.5 m/s
b. 3 m/s
c. 1 m/s
d. 2 m/s
e. More than 2 m/s

____ 29. The Hertz is a
a. special radio wave.
b. type of car.
c. unit of period.
d. unit of wavelength.
e. unit of frequency.

____ 30. A wave created by shaking a rope up and down is called a
a. Doppler wave.
b. standing wave.
c. longitudinal wave.
d. constructive wave.
e. transverse wave.

____ 31. Which of the following is NOT a transverse wave?
a. light.
b. radio wave.
c. sound.
d. all of the above.
e. none of the above

____ 32. The amplitude of a particular wave is 4.0 m. The top-to-bottom distance of the disturbance is
a. 2.0 m.
b. 4.0 m.
c. 8.0 m.
d. none of the above

____ 33. You dip your finger repeatedly into water and make waves. If you dip your finger more frequently, the wavelength of the waves
a. lengthens.
b. stays the same.
c. shortens.

____ 34. During a single period, the distance traveled by a wave is
a. two wavelengths.
b. one wavelength.
c. one half wavelength.

____ 35. A cork floating in a pool oscillates up and down three complete cycles in 1 second as a wave passes by. The wave's wavelength is 2 meters. What is the wave's speed?
a. 1 m/s
b. 2 m/s
c. 6 m/s
d. 12 m/s
e. More than 12 m/s

____ 36. A wave has two crests and two troughs each second. If the wave travels an average distance of 8 meters in 4 seconds, its wavelength is
a. 20 m.
b. 15 m.
c. 10 m.
d. 1 m.
e. 0 m.

____ 37. Waves diffract the most when their wavelengths are
a. long.
b. short.
c. neither of the above.

____ 38. A device that uses two coils around an iron core to change the voltage across a circuit is called a
a. voltmeter.
b. motor.
c. transformer.
d. generator.
e. diode.

____ 39. Cross-country power lines carry voltages of about
a. 60 V.
b. 120 V.
c. 2200 V.
d. 120,000 V.

____ 40. Compared to the wavelength of ultraviolet waves, the wavelength of infrared waves is
a. the same.
b. shorter.
c. longer.

____ 41. Sound waves in air are a series of
a. periodic disturbances.
b. periodic condensations and rarefactions.
c. high- and low-pressure regions.
d. all of the above
e. none of the above

____ 42. A 1134-Hz tuning fork is sounded at the same time a piano note is struck. You hear three beats per second. What is the frequency of the piano string?
a. 1131 Hz
b. 1134 Hz
c. 1137 Hz
d. 2268 Hz
e. Not enough information given to determine

True/False
Indicate whether the statement is true or false.

____ 43. A pulse of compressed air that is part of a sound wave is a rarefaction.

____ 44. In order for sound from a speaker to reach a listener, air near the speaker must travel to the listener.

Semester 2 Exam Review
Answer Section

MULTIPLE CHOICE

1. ANS: E PTS: 1 DIF: L1 OBJ: 35.1 A Battery and a Bulb
   STA: P3.7g KEY: circuit | path BLM: knowledge
2. ANS: B PTS: 1 DIF: L2 OBJ: 35.3 Series Circuits
   STA: P3.7g| P4.10g KEY: bulb | series BLM: comprehension
3. ANS: C PTS: 1 DIF: L2 OBJ: 35.3 Series Circuits
   STA: P3.7g| P4.10g KEY: lamp | circuit | series
   BLM: comprehension
4. ANS: A PTS: 1 DIF: L2 OBJ: 35.3 Series Circuits
   STA: P3.7g| P4.10g KEY: circuit | bulb BLM: application
5. ANS: A PTS: 1 DIF: L1
   OBJ: 35.7 Parallel Circuits and Overloading STA: P4.10C| P4.10h
   KEY: home | electricity BLM: knowledge
6. ANS: E PTS: 1 DIF: L1
   OBJ: 35.7 Parallel Circuits and Overloading STA: P4.10C| P4.10h
   KEY: fuse | breaker BLM: knowledge
7. ANS: A PTS: 1 DIF: L1
   OBJ: 35.7 Parallel Circuits and Overloading STA: P4.10C| P4.10h
   KEY: short circuit BLM: knowledge
8. ANS: A PTS: 1 DIF: L2 OBJ: 35.4 Parallel Circuits
   STA: P3.7g| P4.10g KEY: bulb | parallel | current
   BLM: application
9. ANS: E PTS: 1 DIF: L2 OBJ: 34.4 Electric Resistance
   STA: P3.7g| P4.10D KEY: resistance | ground
   BLM: comprehension
10. ANS: B PTS: 1 DIF: L1
    OBJ: 34.7 Direct Current and Alternating Current STA: P4.10f
    KEY: current | alternating BLM: knowledge
11. ANS: C PTS: 1 DIF: L2 OBJ: 34.5 Ohm's Law
    STA: P3.7g| P4.10D KEY: resistor | power
    BLM: application
12. ANS: E PTS: 1 DIF: L2 OBJ: 34.5 Ohm's Law
    STA: P3.7g| P4.10D KEY: ohm | current | voltage
    BLM: application
13. ANS: E PTS: 1 DIF: L1 OBJ: 32.1 Electrical Forces and Charges
    STA: P3.7A| P3.7c| P3.7d KEY: nucleus | proton | neutron
    BLM: knowledge
14. ANS: A PTS: 1 DIF: L1 OBJ: 32.1 Electrical Forces and Charges
    STA: P3.7A| P3.7c| P3.7d KEY: proton | neutron
    BLM: knowledge
15. ANS: B PTS: 1 DIF: L1 OBJ: 32.2 Conservation of Charge
    STA: P3.7A| P3.7d| P3.7e KEY: net | charge | atom
    BLM: knowledge

16. ANS: E PTS: 1 DIF: L2 OBJ: 32.4 Conductors and Insulators
STA: P3.7B KEY: conductor | insulator BLM: comprehension
17. ANS: C PTS: 1 DIF: L2 OBJ: 32.6 Charging by Induction
STA: P3.7c| P3.7d| P3.7e KEY: electroscope | negative
BLM: analysis
18. ANS: A PTS: 1 DIF: L2 OBJ: 32.6 Charging by Induction
STA: P3.7c| P3.7d| P3.7e KEY: charge | cloud | induction
BLM: comprehension
19. ANS: B PTS: 1 DIF: L1 OBJ: 32.7 Charge Polarization
STA: P3.7B KEY: charge | positive | dipole BLM: knowledge
20. ANS: B PTS: 1 DIF: L2 OBJ: 32.3 Coulomb's Law
STA: P1.2i| P3.7A KEY: charge | acceleration
BLM: analysis
21. ANS: D PTS: 1 DIF: L2 OBJ: 27.3 Electromagnetic Waves
STA: P4.6B| P4.6h| P4.9B KEY: short | wavelength
BLM: comprehension
22. ANS: D PTS: 1 DIF: L1 OBJ: 27.5 Opaque Materials
STA: P4.5A| P4.5B KEY: metal | electrons
BLM: knowledge
23. ANS: A PTS: 1 DIF: L2 OBJ: 27.3 Electromagnetic Waves
STA: P4.6B| P4.6h| P4.9B KEY: wavelength | frequency
BLM: application
24. ANS: D PTS: 1 DIF: L2 OBJ: 29.3 Mirrors
STA: P4.8B KEY: virtual | mirror | image BLM: comprehension
25. ANS: C PTS: 1 DIF: L2 OBJ: 29.11 The Rainbow
STA: P4.8A KEY: secondary | primary | rainbow BLM: analysis
26. ANS: A PTS: 1 DIF: L2 OBJ: 29.11 The Rainbow
STA: P4.8A KEY: circle | shadow | airplane BLM: analysis
27. ANS: E PTS: 1 DIF: L2 OBJ: 25.3 Wave Motion
STA: P4.5A| P4.5C KEY: heat | wave | amplitude
BLM: analysis
28. ANS: D PTS: 1 DIF: L2 OBJ: 25.4 Wave Speed
STA: P4.5D KEY: distance | velocity BLM: application
29. ANS: E PTS: 1 DIF: L1 OBJ: 25.2 Wave Description
KEY: Hertz | unit BLM: knowledge
30. ANS: E PTS: 1 DIF: L1 OBJ: 25.5 Transverse Waves
STA: P4.5B KEY: transverse | wave BLM: knowledge
31. ANS: C PTS: 1 DIF: L2 OBJ: 25.6 Longitudinal Waves
KEY: transverse | wave BLM: comprehension
32. ANS: C PTS: 1 DIF: L2 OBJ: 25.2 Wave Description
KEY: amplitude | distance BLM: application
33. ANS: C PTS: 1 DIF: L2 OBJ: 25.3 Wave Motion
STA: P4.5A| P4.5C KEY: frequency | wavelength
BLM: comprehension
34. ANS: B PTS: 1 DIF: L1 OBJ: 25.2 Wave Description
KEY: period | distance BLM: knowledge
35. ANS: C PTS: 1 DIF: L2 OBJ: 25.4 Wave Speed
STA: P4.5D KEY: cycle | speed | wavelength BLM: application

36. ANS: D PTS: 1 DIF: L2 OBJ: 25.4 Wave Speed
STA: P4.5D KEY: crest | trough |wavelength BLM: application
37. ANS: A PTS: 1 DIF: L2 OBJ: 31.2 Diffraction
STA: P4.6e| P4.6g KEY: wave | diffraction
BLM: comprehension
38. ANS: C PTS: 1 DIF: L1 OBJ: 37.5 Transformers
STA: P4.10B KEY: coil | iron transformer BLM: knowledge
39. ANS: D PTS: 1 DIF: L1 OBJ: 37.6 Power Transmission
STA: P4.10e KEY: voltage | power lines BLM: knowledge
40. ANS: C PTS: 1 DIF: L2 OBJ: 27.3 Electromagnetic Waves
STA: P4.6B| P4.6h| P4.9B KEY: wavelength BLM: comprehension
41. ANS: D PTS: 1 DIF: L2 OBJ: 26.2 Sound In Air
STA: P4.4A| P4.4B| P4.5A KEY: sound | pressure | disturbance
BLM: comprehension
42. ANS: E PTS: 1 DIF: L2 OBJ: 26.1 The Origin Of Sound
STA: P4.5C| P4.5E KEY: hertz | frequency
BLM: application

TRUE/FALSE

43. ANS: F PTS: 1 DIF: L1 OBJ: 26.2 Sound In Air
STA: P4.4A| P4.4B| P4.5A KEY: pulse | rarefaction
BLM: knowledge
44. ANS: F PTS: 1 DIF: L2 OBJ: 26.2 Sound In Air
STA: P4.4A| P4.4B| P4.5A KEY: sound | air BLM: comprehension