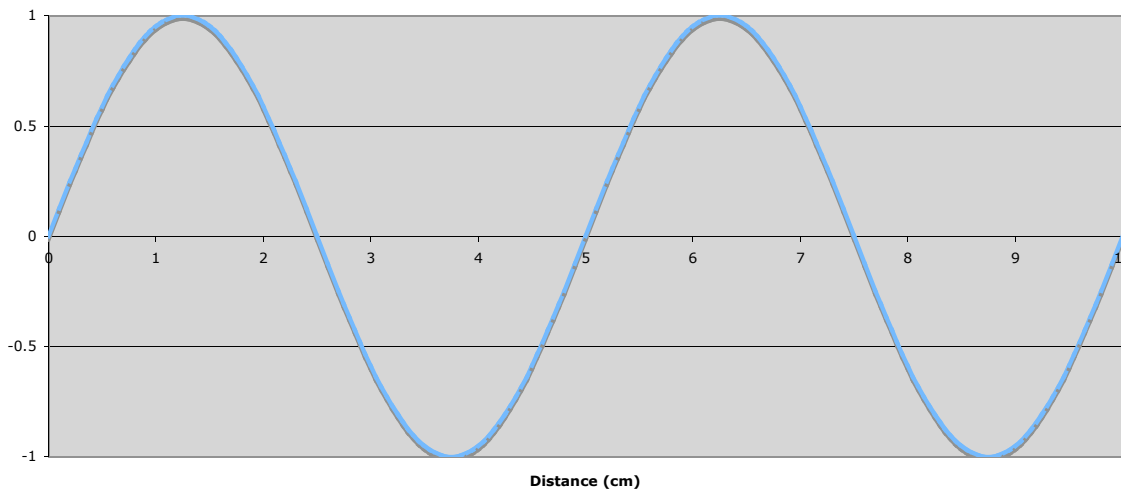


Name: _____

Ground Rules

- 1. This is a sample exam. The purpose of this document is to give you an idea of the subject material and format of the real exam. Note, there may be material on the real exam that is not covered in this exam. There may also be material on this exam that you do not find in the real exam. Use this sample exam with caution.**
- 2. The real exam is partially open book. You may have access to your textbook and any other notes you have made in your own handwriting. You may not use any other materials, including other textbooks, sample exams, study guides, or notes written in anyone else's handwriting. *You may not bring this sample exam into the real exam.***
- 3. Answers are given at the end. You are strongly advised to work through the test completely before looking at the answers.**

Figure 1



- 1) A slinky is shaken back and forth and waves propagate down the length of it. Figure 1 shows the configuration of the slinky at some point in time. The amplitude of the waves is
A) 1 cm B) 2 cm C) 5 cm D) 10 cm
- 2) A slinky is shaken back and forth and waves propagate down the length of it. Figure 1 shows the configuration of the slinky at some point in time. The wavelength of the waves is
A) 1 cm B) 2.5 cm C) 5 cm D) 10 cm
- 3) A slinky is shaken back and forth and waves propagate down the length of it. Figure 1 shows the configuration of the slinky at some point in time. The waves travel at a speed of 10 cm/s. What is the frequency of this wave?
A) 1 Hz B) 2 Hz C) 5 Hz D) 10 Hz
- 4) A power line carries 10 A of current and has resistance 2.0 Ω . What is the voltage drop in the line?
A) 200 V B) 20 V C) 10 V D) 5 V

- 5) A car stereo draws 24 A of current at voltage 12 V. What power does it use?
A) 288 W B) 24 W C) 12 W D) 2 W
- 6) In an open circuit,
A) current flows normally.
B) no current flows.
C) electrons can take a short cut.
D) only open currents can flow.
- 7) The pitch of a musical note refers to its
A) amplitude B) energy C) frequency ratio relative to an adjacent note D) frequency
- 8) The strings of a guitar are tuned by changing the tension using the knobs at the end. Increasing the tension of a guitar string
A) decreases the speed at which waves propagate on the string.
B) increases the speed at which waves propagate on the string.
C) increases the mass density of the string.
D) decreases the mass density of the string.
- 9) Two charged objects, each with a charge of +1 C are placed 1 m apart. What force is exerted on one by the other?
A) 9×10^9 N, attractive.
B) 1×10^{-10} N, attractive.
C) 9×10^9 N, repulsive.
D) 1×10^{-10} N, repulsive.
- 10) Two sounds differ from each other in loudness by 10 decibels.
A) They are just barely distinguishable in volume.
B) One sound is perceived to be twice as loud as the other.
C) The softer sound is barely audible by a normal human ear.
D) The louder sound must be so loud it is painful to listen to.
- 11) Electric current is
A) the number of Coulombs of charge contained in a wire at a given time.
B) the energy carried by each charge in a wire, per unit charge.
C) the energy carried by each charge in a wire.
D) the amount of charge flowing past a point in a wire per unit time.
- 12) Which of the following is an example of an effective electrical insulator?
A) copper B) salt water C) gold D) rubber
- 13) If the current in a wire is 100 A, how long does it take for 1 Coulomb of charge to flow through the wire?
A) 0.01 s B) 0.1 s C) 1 s D) 100 s
- 14) A light bulb filament carries a current of 0.833 A when 120 V is applied across it. What is its resistance?
A) 0.833 Ω B) 100 Ω C) 120 Ω D) 144 Ω

- 15). Which of the following is an example of a *purely* longitudinal wave
A) water waves B) waves on strings C) light D) sound
- 16) A 1500 Watt water heater runs for two hours to heat up a tank of water. How much energy does it use?
A) 2 kWh
B) 3 kWh
C) 1500 kWh
D) 3000 kWh
- 17) Which of the following would cost the most in terms of your electric bill?
A) a 3000 W heat pump running for 15 minutes
B) a 10 W radio running for 10 days
C) a 1500 W water heater running for 2 hours
D) a 100 W light bulb burning for 24 hours
- 18) Household devices are usually wired in
A) series
B) parallel
C) both series and parallel
D) neither series nor parallel
- 19) What is the frequency of a vibration with period 0.02 seconds?
A) 0.02 Hertz
B) 0.02 second
C) 50 Hertz
D) 50 seconds
- 20) Two musical tones are an interval of a fifth apart. They differ in frequency by a factor of
A) 4
B) 2
C) $3/2$
D) $2^{1/2}$

Answers:

Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	A	C	B	B	A	B	D	B	A	B	D	D	A	D	D	B	C	B	D	C