Physics 1C Spring 2010
Quiz 1A

Name_____

Constants. speed of sound in air =340 m/s, acceleration of gravity g= 9.8 m/s^2

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Two speakers vibrating at the same frequency are placed directely in front of an observer. As one speaker is moved backward by 10 cm the measured sound intensity goes from a maximum to a minimum. The frequency of the sound is _____. 1) _____
A) 1.7 kHz B) 3.4 kHz C) 5.5 kHz D) 0.85 kHz

2) A column of air 10 cm long has one end open and one end closed. The wavelength of the third harmonic in this tube is _____m. 2) _____
A) 30 cm B) 13 cm C) 3.3 cm D) 6.7 cm

3) The sound of an warning siren with an audio power of 100 W is heard by a person at an intensity level of 60 dB. Assuming that sound propagates uniformly in all directions without dissipation how far from the siren is the person? 3) _____
A) 2.8 km B) 5.3 km C) 1.6 km D) 0.75 km

4) When white light is refracted by passing through the interface from air to glass, the angle of refraction is greatest for _____ light. 4) _____
A) green B) blue C) yellow D) red

5) A violin string oscillating at a fundamental frequency of 660 Hz is 33 cm long and is stretched with a tension of 70 N. Find the mass of the vibrating string. 5) _____
A) 0.26 g B) 0.12 g C) 0.35 g D) 0.08 g

6) In order to have total internal reflection, the angle of incidence must be equal to or _____ than the critical angle and the light must encounter an interface where the refractive index _____ 6) _____
A) greater, increases B) less, increases
C) less, decreases D) greater, decreases

7) A train passes a siren next to the track and a heads toward a second siren in front of it. Both sirens have a frequency of 1000 Hz. A passenger on the train hears a beat frequency of 150 Hz due to two sirens. Find the speed of the train. 7) _____
A) 21 m/s B) 15 m/s C) 34 m/s D) 26 m/s

8) A student with a mass of 50 kg steps into a 1500 kg car lowering it on its suspension by 2.0 cm. She drives off and hits a bump and the car oscillates due to defective shock absorbers. The frequency of oscillation is _____. 8) _____
A) 0.63 Hz B) 0. 31 Hz C) 0.89 Hz D) 1.52Hz

9) The proton on a water molecule vibrates like a mass on a spring and absorbs infrared light in resonance having a frequency of f. If a proton on the water molecule is replaced by a deuterium atom having twice the mass of the proton the frequency of the absorbed radiation will be ____. 9) _____
A) 0.71 f B) 0.5 f C) 1.41 f D) 2 f

10) The wavelength of visible light is close to _____. 10) _____
A) 1 micrometer B) 1 meter C) 1 centimeter D) 1 nanometer

Answer Key
Testname: QUIZ1

1) A
2) B
3) A
4) D
5) B
6) D
7) D
8) A
9) A
10) A