

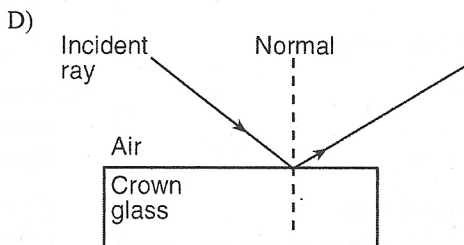
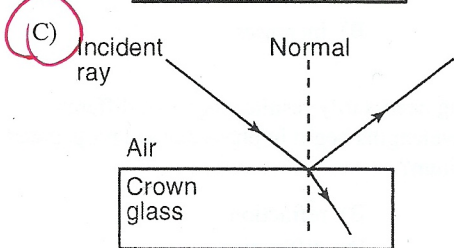
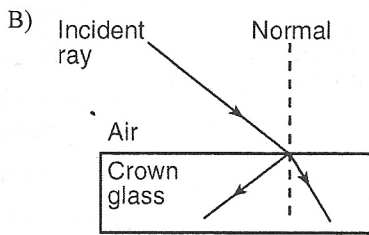
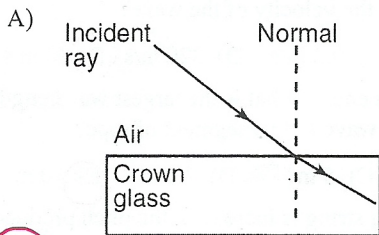
Waves Practice Test

_____ Name _____

KEY

Score _____

1. Which diagram best represents the behavior of a ray of monochromatic light in air incident on a block of crown glass?



2. Which of the following is not a wave phenomenon?

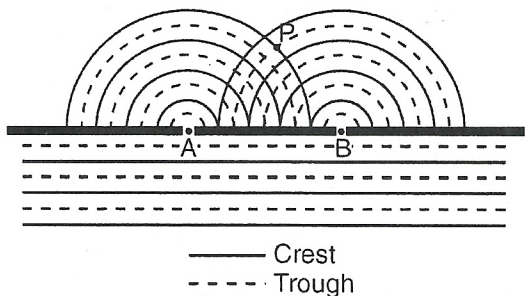
A) Reflection

B) Refraction

C) Diffraction

D) Diffusion

3. The diagram below represents shallow water waves of constant wavelength passing through two small openings, A and B, in a barrier.



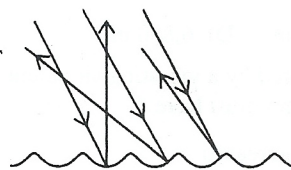
Which statement best describes the interference at point P?

- A) It is destructive, and causes a shorter wavelength.
 - B) It is destructive, and causes a decrease in amplitude.
 - C) It is constructive, and causes a longer wavelength.
 - D) It is constructive, and causes an increase in amplitude.
4. Radio waves diffract around buildings more than light waves do because, compared to light waves, radio waves
- A) have a higher frequency
 - B) move faster
 - C) have a longer wavelength
 - D) move slower
5. Diffraction of light demonstrates that light
- A) is composed of tiny units of energy
 - B) has wave properties
 - C) can be polarized
 - D) can be reflected
6. In a vacuum, all electromagnetic waves have the same
- A) frequency
 - B) phase
 - C) speed
 - D) wavelength

7. Radio waves are propagated through the interaction of

- A) gravitational and magnetic fields
- B) gravitational and electric fields
- C) nuclear and electric fields
- D) electric and magnetic fields

8. The diagram below shows parallel rays of light incident on an irregular surface.



Which phenomenon of light is illustrated by the diagram?

- A) refraction
 - B) diffraction
 - C) diffuse reflection
 - D) regular reflection
9. As a wave is refracted, which characteristic of the wave will remain unchanged?
- A) direction
 - B) velocity
 - C) frequency
 - D) wavelength

10. Orange light has a frequency of 5.0×10^{14} hertz in a vacuum. What is the wavelength of this light?

- A) 1.5×10^{23} m
- B) 2.0×10^{-15} m
- C) 6.0×10^{-7} m
- D) 1.7×10^6 m

1. Which of the following properties of a sound wave would change due to the Doppler Effect?

- I. amplitude
- II. frequency
- III. velocity

- A) II and III only
- B) III only
- C) I and II only
- D) II only
- E) I, II, and III

2. Standing waves are the result of which of the follow?

- I. Reflection
- II. Interference
- III. Diffraction

- A) II only
- B) I and III only
- C) I only
- D) I and II only
- E) II and III only

3. Which of the following is NOT associated with the damaging of a bridge by wind?

- A) diffraction
- B) resonance
- C) natural frequency
- D) standing waves
- E) reflection and interference

4. A person sees a bolt of lightning and then hears the thunder 4 seconds later. If the air temperature is 20°C , approximately how far away was the lightning?

- A) 1,376 m
- B) 86 m
- C) 344 m
- D) 6,880 m

5. If the frequency of the sound produced by a vibrating air column increases, the length of the air column must have

- A) decreased
- B) increased
- C) remained the same

7. If the velocity of a wave must remain constant, which of the following best describes the relationship between wavelength and period?

- A) The velocity must change if the wavelength changes.
- B) If the wavelength increases, the period remains the same.
- C) If the period increases, the wavelength must decrease.
- D) If the wavelength increases, the period decreases proportionately.
- E) If the wavelength increases, the period increases proportionately.

8. A pipe in a calliope is closed at one end and is 0.5 m long. The calliope uses hot air so that the speed of sound in the tube is 400 m/s. What is the fundamental frequency of the calliope tube?

- A) 300 Hz
- B) 200 Hz
- C) 100 Hz
- D) 400 Hz
- E) 500 Hz

9. A wave travels through a long rope with a wavelength of 20 m and a frequency of 4 Hz. What is the velocity of the wave?

- A) 5 m/s
- B) 10 m/s
- C) 0.2 m/s
- D) 320 m/s
- E) 80 m/s

10. A 5 m rope is fixed at both ends. What is the largest wavelength that could have a standing wave in this segment of rope?

- A) 1.25 m
- B) 2.5 m
- C) 5 m
- D) 7.5 m
- E) 10 m

11. As the length of a vibrating string is increased, the pitch produced

- A) decreases
- B) increases
- C) remains the same

12. Which of the following necessarily results when two different waves of different wavelengths begin in phase and are propagated through the same medium?

- A) polarization
- B) refraction
- C) interference
- D) diffraction
- E) Doppler shift

13. A tuning fork resonates over an air tube 20 centimeters long that is closed at one end. The wavelength of the sound produced by the tuning fork is

- A) 40 cm
- B) 20 cm
- C) 5 cm
- D) 80 cm