

## 2017 EOU - Waves

**Multiple Choice**

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

- \_\_\_\_\_ 1. Radio waves travel at the speed of light, 300,000 km/s. The wavelength of a radio wave received at 100 megahertz is
- 0.3 m.
  - 30 m.
  - 3.3 m.
  - 3.0 m.
- \_\_\_\_\_ 2. The law of reflection says that
- the angle a ray is reflected from a mirror is random.
  - the angle of reflection from a mirror equals the angle of incidence.
  - all waves incident on a mirror are reflected.
  - waves incident on a mirror are partially reflected.
- \_\_\_\_\_ 3. A wave travels an average distance of 8 meters in 1 second. What is the wave's velocity?
- Less than 0.1 m/s
  - 1 m/s
  - 4 m/s
  - 8 m/s
  - More than 8 m/s
- \_\_\_\_\_ 4. The Doppler effect is the change in observed frequency due to
- the original frequency of the source.
  - the motion of the source or observer.
  - the type of medium the wave is in.
  - the type of wave.
  - all of the above
- \_\_\_\_\_ 5. The distance between successive identical parts of a wave is called its
- amplitude.
  - period.
  - wavelength.
  - velocity.
  - frequency.
- \_\_\_\_\_ 6. Refraction is caused by
- displaced images.
  - more than one reflection.
  - bending.
  - different wave speeds.
- \_\_\_\_\_ 7. A beam of light emerges from water into air at an angle. The beam is bent
- 96 degrees upward.
  - 48 degrees upward.
  - towards the normal.
  - not at all.
  - away from the normal.

- \_\_\_\_\_ 8. A longitudinal wave lacks which of the following properties?
- wavelength.
  - speed.
  - amplitude.
  - frequency.
  - A longitudinal wave has all of the above.
- \_\_\_\_\_ 9. A certain ocean wave has a frequency of 0.07 hertz and a wavelength of 10 meters. What is the wave's speed?
- 143 m/s
  - 0.70 m/s
  - 1.0 m/s
  - 0.07 m/s
  - 10 m/s
- \_\_\_\_\_ 10. As the sound of a car's horn passes and recedes from you, the pitch of the horn seems to
- increase.
  - stay the same.
  - decrease.
- \_\_\_\_\_ 11. A skipper on a boat notices wave crests passing the anchor chain every 5.0 seconds. The skipper estimates the distance between crests at 20.0 m. What is the speed of the water waves?
- 20.0 m/s
  - 4.0 m/s
  - not enough information given
  - 5.0 m/s
- \_\_\_\_\_ 12. When a wave passes through an opening, some of the wave is bent. This phenomenon is called
- refraction.
  - interference.
  - reflection.
  - polarization.
  - diffraction.
- \_\_\_\_\_ 13. You dip your finger repeatedly into water and make waves. If you dip your finger more frequently, the wavelength of the waves
- lengthens.
  - stays the same.
  - shortens.
- \_\_\_\_\_ 14. It is difficult to see the roadway from a car on a rainy night because the road surface
- is obscured by the rain itself.
  - scatters light in all directions.
  - absorbs the light more when wet.
  - that is normally a diffuse reflector when dry becomes a mirror surface when wet.
- \_\_\_\_\_ 15. The amplitude of a particular wave is 3.0 m. The top-to-bottom distance of the disturbance is
- 3.0 m.
  - 1.5 m.
  - 6.0 m.
  - none of the above

- \_\_\_ 16. The time needed for a wave to make one complete cycle is its
  - a. wavelength.
  - b. amplitude.
  - c. frequency.
  - d. period.
  - e. velocity.
- \_\_\_ 17. Different colors of light travel at different speeds in a transparent medium. In a vacuum, different colors of light travel at
  - a. different speeds.
  - b. the same speed.
- \_\_\_ 18. Colors seen when gasoline forms a thin film on water are a demonstration of
  - a. polarization.
  - b. diffraction.
  - c. refraction.
  - d. dispersion.
  - e. interference.
- \_\_\_ 19. A wave created by shaking a rope up and down is called a
  - a. transverse wave.
  - b. constructive wave.
  - c. standing wave.
  - d. Doppler wave.
  - e. longitudinal wave.
- \_\_\_ 20. Destructive interference occurs when
  - a. the crests of two waves overlap.
  - b. the crest of one wave meets the trough of another wave.
  - c. two waves of the same color overlap.
  - d. all of the above
  - e. none of the above