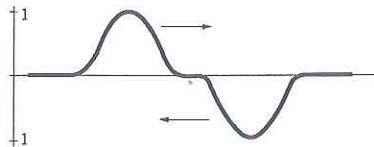


Please do not write on the test

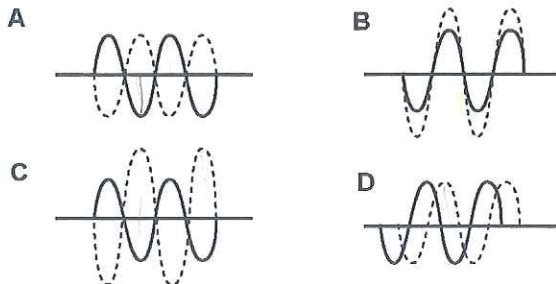
Multiple Choice

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

1. Waves arriving at a free boundary are
- a. reflected and inverted.
 - b. neither reflected nor inverted.
 - c. inverted but not reflected.
 - d. reflected but not inverted.



2. Which of the following types of interference will occur when the pulses in the figure above meet?
- a. no interference
 - b. partial interference
 - c. complete constructive interference
 - d. complete destructive interference
3. You are still able to hear sounds coming from a room when the door is open only a tiny crack due to:
- a. diffraction.
 - b. reflection.
 - c. refraction.
 - d. absorption.
4. Which pair of waves produces a resultant wave with the largest amplitude?



- a. A
- b. B
- c. C
- d. D

5. A wave will travel only as long as it has ____ to carry.
- a. amplitude
 - b. matter
 - c. mass
 - d. energy
6. Two large waves on the ocean come together on the ocean's surface to form a gigantic wave. The interaction responsible for this is called:
- a. amplitude destruction.
 - b. constructive interference.
 - c. frequency amplification.
 - d. destructive interference.
7. Gamma rays are dangerous because they
- a. break down molecules and cells
 - b. cause sunburn
 - c. fluoresce
 - d. cause food to spoil
8. The electromagnetic waves that are beneficial in small amounts but responsible for skin cancer, sunburn, and cataracts in larger amounts are ____ waves.
- a. visible light
 - b. AM radio
 - c. ultraviolet
 - d. infrared

9. Waves arriving at a fixed boundary are
- reflected and inverted.
 - inverted but not reflected.
 - neither reflected nor inverted.
 - reflected but not inverted.

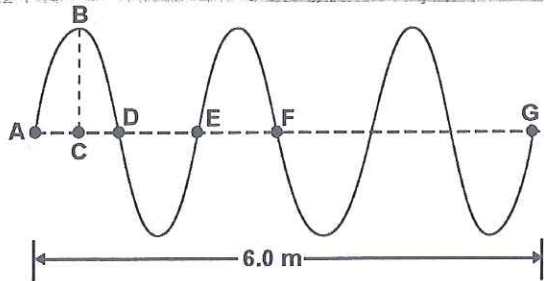


Figure 20-1A

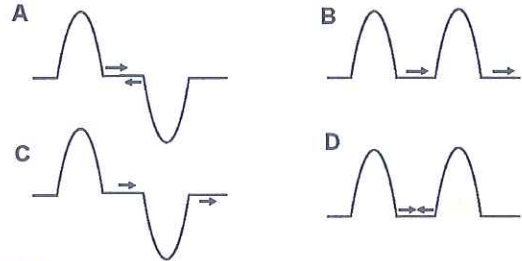
The diagram represents a wave pattern in a certain medium. Answer the following questions based on the diagram.

10. Referring to Figure 20-1A, the crest is shown as
- A
 - B
 - A to D
 - C to B
 - A to E
11. Referring to Figure 20-1A, the wavelength in the diagram is represented by the distance from:
- A to D.
 - B to C.
 - D to F.
 - F to G.
12. Referring to Figure 20-1A, amplitude of the wave is shown by
- A
 - B
 - A to D
 - C to B
 - A to E

13. Referring to Figure 20-1A, how many waves are shown?
- 2
 - 3
 - 4
 - 5
 - 6

14. Electromagnetic radiation with the shortest wavelengths is ____.
- ultraviolet waves
 - radio waves
 - gamma rays
 - infrared waves

15. Which pair of moving pulses in a rope will produce destructive interference?



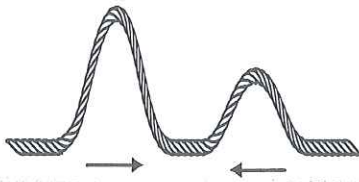
- A
- B
- C
- D

16. Which of the following has the lowest frequency, and therefore, longest wavelength?

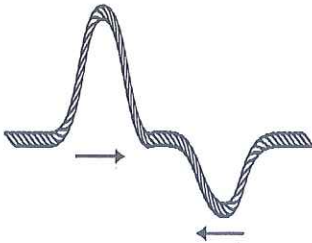
- Microwaves
- Visible Light
- Infrared
- Gamma Rays
- Radio Waves

17. If you are on a train, how will the pitch of the train's whistle sound to you as the train moves?
- The pitch will become steadily lower.
 - The pitch will become steadily higher.
 - The pitch will become higher, then become lower.
 - The pitch will not change.

18. Sound travels in a ____ wave.
- surface
 - inverted
 - transverse
 - compressional
19. Two waves traveling in opposite directions on a rope meet and undergo complete destructive interference. Which of the following best describes the waves a moment after the waves meet and coincide?
- A single wave continues along the rope.
 - The waves reflect and travel backward.
 - The waves no longer exist.
 - The waves continue unchanged.
20. Which of the following has the has more energy than radiowaves but less energy than infrared?
- Ultraviolet
 - Visible Light
 - Microwaves
 - X-Rays
 - Radio Waves
21. Which of the following has has the highest frequency, and therefore, the shortest wavelength?
- Ultraviolet
 - Visible Light
 - Infrared
 - Gamma Rays
 - Radio Waves
22. As a wave front crosses a boundary between two different media, the wave front may change direction, an interaction known as:
- diffraction.
 - reflection.
 - absorption.
 - refraction.
23. Diffraction causes waves to:
- become smaller as they move.
 - spread out through small openings.
 - increase their frequency.
 - bounce off hard surfaces.
24. Which of the following causes the warmth you feel from the sun?
- Ultraviolet
 - Visible Light
 - Infrared
 - Gamma Rays
 - Microwaves
25. The bending of a wave front around a barrier is called:
- refraction.
 - diffraction.
 - absorption.
 - reflection.
26. Wave A carries more energy than wave B. Wave B has a smaller ____ than wave A.
- speed
 - amplitude
 - frequency
 - wavelength
27. When you squeeze together the coils of a spring and then release them, you are creating a ____ wave.
- transverse
 - water
 - seismic
 - compressional
28. A train moves down the track toward an observer. The sound from the train, as heard by the observer, is ____ the sound heard by a passenger on the train.
- a different timbre than
 - lower in pitch than
 - the same as
 - higher in pitch than



29. Which of the following types of interference will occur when the pulses in the figure above meet?
- a. no interference
 - b. constructive interference**
 - c. total interference
 - d. destructive interference



30. Which of the following types of interference will occur when the pulses in the figure above meet?
- a. constructive interference
 - b. total interference
 - c. no interference
 - d. destructive interference**

31. For the Doppler effect to occur, ____.
- a. the listener must be moving
 - b. both source and listener must be moving
 - c. the sound source must be moving
 - d. either source or listener must be moving**

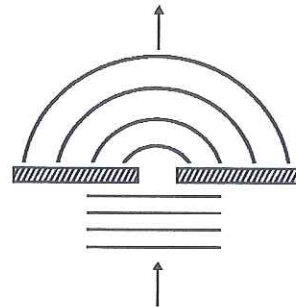
32. Which of the following is ROYGBIV?

- a. Ultraviolet
- b. Visible Light**
- c. Infrared
- d. Gamma Rays
- e. Radio Waves

33. When a wave passes from a less dense medium to a more dense medium, the ____ may change.
- a. frequency
 - b. wavelength
 - c. speed, frequency, and wavelength
 - d. speed**

34. The Doppler effect occurs with
- a. only transverse waves.
 - b. only water waves.
 - c. all waves.**
 - d. only sound waves.

35. The diagram represents a wave interaction as wave fronts pass through a small opening. This is an example of:



- a. refraction.
- b. absorption.
- c. diffraction.**
- d. reflection.

36. Which of the following has the highest energy?
- Radiowaves
 - X-Rays
 - Infrared
 - Gamma Rays
 - Visible light waves
37. When the crest of one wave passes through the trough of another wave, _____ takes place.
- constructive interference
 - destructive interference
 - resonance
 - diffraction
38. The electromagnetic waves with wavelengths slightly longer than visible light are _____.
- microwaves
 - ultraviolet waves
 - X rays
 - infrared waves
39. Electromagnetic waves _____.
- are generated by static electricity
 - are compressional waves
 - must have a medium
 - are transverse waves
40. The energy a wave carries is measured by its _____.
- speed
 - frequency
 - amplitude
 - wavelength
41. Waves in which the particles of the medium move only in the same direction as the motion of the wave are _____ waves.
- water
 - compressional
 - transverse
 - seismic
42. When light is reflected from a surface, as the angle of incidence increases, the angle of reflection _____.
- increases
 - cannot be determined
 - decreases
 - remains the same
43. The electromagnetic waves with the shortest wavelength are:
- gamma rays.
 - visible light waves.
 - radio waves.
 - microwaves.
44. The frequency of purple light is _____ that of yellow light.
- higher than
 - the same as
 - lower than
 - faster than
45. The _____ is the particle that carries radiant energy.
- neutron
 - photon
 - proton
 - electron

