CHAPTER 11-12
VIBRATION AND WAVES / SOUND
CONCEPTS QUESTIONS

1. ______________ Maximum destructive interference between two waves occurs when the waves are out of phase by ______ degrees.

2. ______________ As the period of a wave decreases, the wave’s frequency _____.

3. ______________ All electromagnetic waves have the same _______ in a vacuum.

4. ______________ Standing waves are produced by the interference of two waves with the same frequency and amplitude but opposite ______.

5. ______________ Whether or not a wave is longitudinal or transverse may be determined by its ability to be ________.

6. ______________ A characteristic common to sound waves and light waves is that they transfer ______.

7. ______________ A sound wave can not be ________.

8. ______________ A single vibratory disturbance which moves from point to point in a material is known as a ________.

9. ______________ The vibrating tuning fork shown to the right produces a constant frequency. The tuning fork is moving to the right at a constant speed, and observers are located at points A, B, C, and D. The observer at ________ hears the lowest frequency.

10. ______________ In a nondispersive medium, the speed of light waves depends on the nature of the ________.

11. ______________ A laser beam does not disperse as it passes through a prism because the laser beam is ________.

12. ______________ As a wave is refracted, the frequency of the wave will remain ________.

13. ______________ As a periodic wave travels from one medium to another, the ________ and ________ of that wave cannot change.

14. ______________ Diffraction and interference will occur when light passes through a ________.

15. ______________ As a wave enters a medium, there may be a change in the wave’s ________.

16. ______________ The color spectrum ranges in order from: ________, ________, ________, ________, ________, ________, and ________.

17. ______________ In the diagram to the right, the distance between points A and B on a wave is 0.10 m. This wave must have a wavelength of ________.
18. The diagram to the right represents waves passing through a small opening in a barrier. This is an example of _______.

19. Only coherent wave sources produce waves that have a _______ relation.

20. A beam of light entering a glass prism obliquely (at an angle) and emerging as a band of colors illustrates the process of _______.

21. Refraction of a wave is caused by a change in the wave’s _______.

22. The change in direction of a wave when it passes obliquely from one medium to another is called _______.

23. An observer detects an apparent change in the frequency of sound waves produced by an airplane passing overhead. This phenomenon illustrates the _______.

24. As the energy imparted to a mechanical wave increases, the maximum Displacement of the particles in the medium _______.

25. Interference occurs when two or more waves pass simultaneously through the same region in a _______.

26. The diagram to the right shows white light being dispersed as it passes from air into a glass prism. This phenomenon occurs because in glass each frequency of light has a different absolute index of _______.

27. The diagram on the right represents a group of light waves emitted simultaneously from a single light source. The light waves would be classified as both _______ and _______.

28. As a pulse travels through a stretched heavy rope attached to a light rope its speed will _______ as it travels through the light rope.

29. The distance between successive antinodes in the standing wave pattern shown to the right is equal to _______wavelength.

30. The diagram to the right shows a transverse water wave moving in the direction shown by the velocity vector v. At the instant shown, a cork at point P on the water’s surface is moving toward _______.

31. If the frequency of a sound wave in air at STP remains constant, its energy can be varied by changing its _______.

32. As observed from the Earth, the light from a star is shifted toward lower frequencies. This is an indication that the distance between the Earth and the star is _______.
33. ____________ The graph that best represents the relationship between the frequency and period of a wave is ____________.

34. ____________ When the stretched string of the apparatus on the right is made to vibrate, point P does not move. Point P is most probably at the location of a _____.

35. ____________ Light is to brightness as sound is to ________.

36. ____________ An opera singer’s voice is able to break a thin crystal glass if the singer’s voice and the glass have the same natural ____________.

37. ____________ Two waves have the same frequency. They must also have identical _____.

38. ____________ As the temperature of the air increases, the velocity of sound ____________.

39. ____________ Compared to the velocity of a 400 Hz sound, the velocity of a 200 Hz sound through air is ________________.

40. ____________ Compared to the wavelength of a 400 Hz sound, the wavelength of a 200 Hz sound in air is ________________.

41. ____________ Sound vibrations with frequencies greater than 20,000 Hz are called ____________.

42. ____________ Sound vibrations with frequency less than 20 Hz are called ____________.

43. ____________ Suppose that a sound source is emitting waves uniformly in all directions. If you move to a point twice as far away from the source, the frequency of the sound will be ________________.

44. ____________ You double your distance from a sound source that is radiating equally in all directions. What happens to the intensity of the sound? It reduces to ____________.

45. ____________ ____________ determines the "pitch" of a musical note.

46. ____________ When sound passes from air into water its ____________ does not change.

47. ____________ In order to produce beats, the two sound waves should have slightly different ________________.

48. ____________ A sound source approaches a stationary observer. The frequency heard by the observer is ________________ than the source.