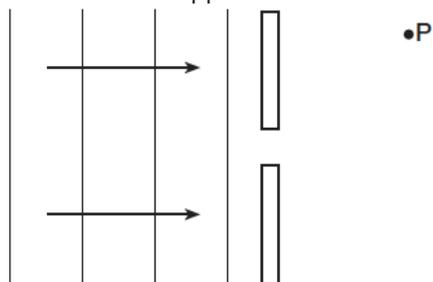


Waves-Diffraction

1. A wave of constant wavelength diffracts as it passes through an opening in a barrier. As the size of the opening is increased, the diffraction effects
1. decrease
 2. increase
 3. remain the same

2. The diagram below shows a series of wave fronts approaching an opening in a barrier. Point P is located on the opposite side of the barrier.

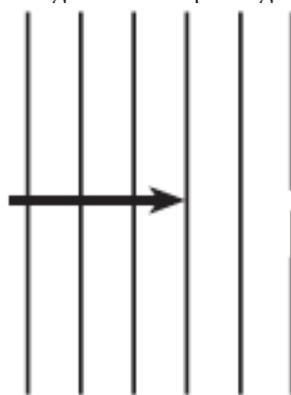


The wave fronts reach point P as a result of

1. resonance
 2. refraction
 3. reflection
 4. diffraction
3. Which wave phenomenon makes it possible for a player to hear the sound from a referee's whistle in an open field even when standing behind the referee?
1. diffraction
 2. Doppler effect
 3. reflection
 4. refraction

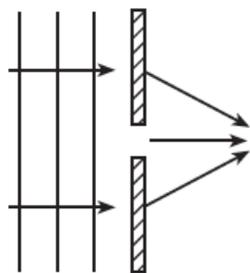
4. A wave is diffracted as it passes through an opening in a barrier. The amount of diffraction that the wave undergoes depends on both the
1. amplitude and frequency of the incident wave
 2. wavelength and speed of the incident wave
 3. wavelength of the incident wave and the size of the opening
 4. amplitude of the incident wave and the size of the opening

5. The diagram below shows a plane wave passing through a small opening in a barrier.

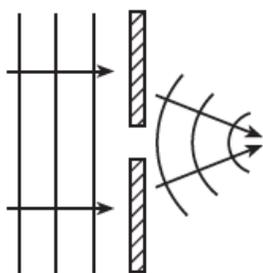


On the diagram above, sketch four wave fronts after they have passed through the barrier.

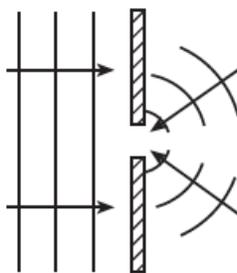
6. Which diagram best represents the shape and direction of a series of wave fronts after they have passed through a small opening in a barrier?



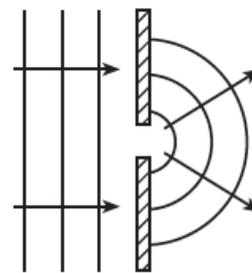
(1)



(2)



(3)

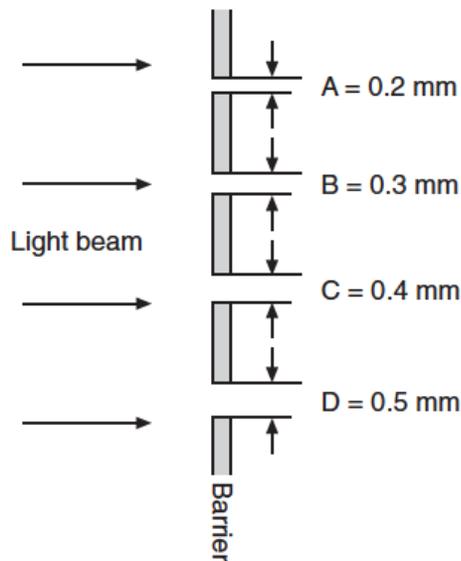


(4)

Waves-Diffraction

7. Parallel wave fronts incident on an opening in a barrier are diffracted. For which combination of wavelength and size of opening will diffraction effects be greatest?
1. short wavelength and narrow opening
 2. short wavelength and wide opening
 3. long wavelength and narrow opening
 4. long wavelength and wide opening

8. A beam of monochromatic light approaches a barrier having four openings, A, B, C, and D, of different sizes as shown below.



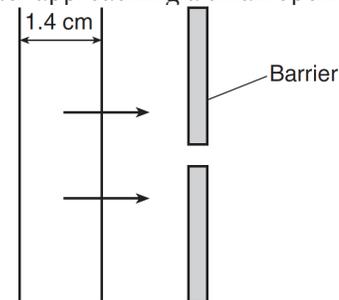
Which opening will cause the greatest diffraction?

1. A
 2. B
 3. C
 4. D
9. Radio waves diffract around buildings more than light waves do because, compared to light waves, radio waves
1. move faster
 2. move slower
 3. have a higher frequency
 4. have a longer wavelength

10. Waves pass through a 10-centimeter opening in a barrier without being diffracted. This observation provides evidence that the wavelength of the waves is
1. much shorter than 10 cm
 2. equal to 10 cm
 3. longer than 10 cm, but shorter than 20 cm
 4. longer than 20 cm.

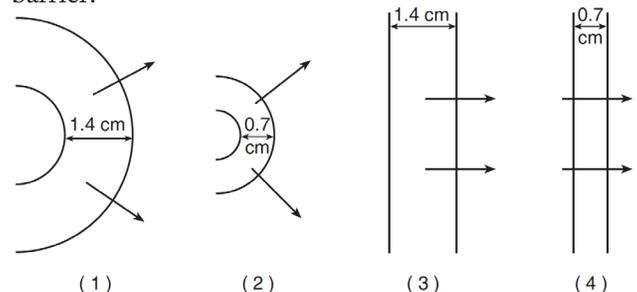
11. The spreading of a wave into the region behind an obstruction is called
1. diffraction
 2. absorption
 3. reflection
 4. refraction

12. The diagram below shows a series of straight wave fronts produced in a shallow tank of water approaching a small opening in a barrier.



Wave fronts

Which diagram represents the appearance of the wave fronts after passing through the opening in the barrier?



Waves-Diffraction

13. The diagram below shows wave fronts approaching an opening in a barrier. The size of the opening is approximately equal to one-half the wavelength of the waves. On the diagram, draw the shape of at least three of the wave fronts after they have passed through this opening.

