



## Physics

1 A sound source produces 60 vibrations within 1.5 s and the produced wave propagates in air with a speed of 340 m/s, then the distance between the centers of a compression and a successive rarefaction equals .....

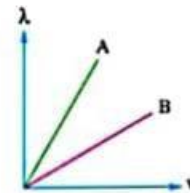
- (a) 2.8 m (b) 4.25 m  
(c) 5.67 m (d) 8.5 m

2 A student uses in the double-slit experiment laser rays of wavelength  $6328 \text{ \AA}$ . If the distance between the double slit and the observation screen is 85 cm and the distance between the centers of the central fringe and the fourth bright fringe is 1.8 mm, then the distance between the two slits is .....

- (a) 0.68 mm (b) 0.8 mm  
(c) 1 mm (d) 1.2 mm

3 The opposite graph shows the relations between the speeds ( $v$ ) of two different waves (A and B) and their wavelengths ( $\lambda$ ) when they propagate through different media, so which of the following relations is correct for the frequency ( $\nu$ ) of the two waves?

- (a)  $v_A < v_B$  (b)  $v_A = v_B \neq 0$   
(c)  $v_A > v_B$  (d)  $v_A = v_B = 0$

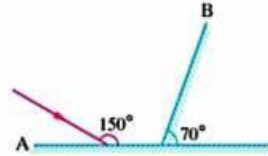


4 Load is attached to a spring where it is in equilibrium, if the load is pulled downwards for a distance 10 cm then it is left to pass by the equilibrium position for the first time after 0.5 s, then .....

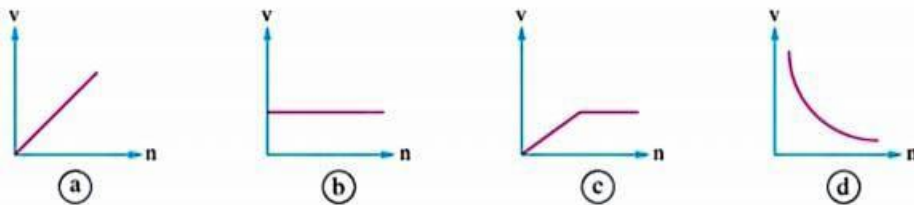
	The amplitude of the vibration (cm)	The periodic time (s)
(a)	10	1.5
(b)	10	2
(c)	20	2
(d)	20	1.5

- 5 In Young's experiment a blue light of wavelength  $\lambda$  is used to pass through two narrow slits that are at a distance  $d$  from each other, so interference fringes appear with a certain pattern on the observation screen that is at distance  $R$  from the slits. If the experiment is repeated under the surface of water, the distance between the fringes will .....
- (a) remain constant                      (b) decrease  
(c) increase                                (d) be indeterminable

- 6 In the opposite figure, the angle of reflection of the light ray on mirror B equals .....
- (a)  $30^\circ$                                       (b)  $50^\circ$   
(c)  $60^\circ$                                       (d)  $90^\circ$

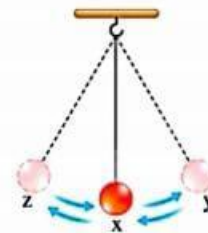


- 7 The graph that represents the relation between the speed of light ( $v$ ) in several media and the absolute refractive index ( $n$ ) for each of them is .....



- 8 The electromagnetic waves in which the diffraction becomes more clearer when they pass through aperture of dimensions  $10^{-5}$  m are .....
- (a) microwaves      (b) radio waves      (c) gamma rays                      (d) UV waves

- 9 The opposite figure shows the motion of a simple pendulum of periodic time  $T$ , so which of the following statements is wrong?
- (a) The speed of the load at  $x >$  The speed of the load at  $y$   
(b) The speed of the load at  $z =$  zero  
(c) The amplitude = The distance between  $z$  and  $y$   
(d) The time taken by the load to cover the distance  $xy = \frac{T}{4}$



**10** Red laser beams are pointed toward three groups of different double-slits (A, B and C). If the separating distances between the two slits in the three groups are 0.15 mm, 0.175 mm and 0.15 mm respectively and the distances between the observation screens and the slits are 0.6 m, 0.8 m and 0.8 m respectively, **arrange in an ascending order** the three groups according to the distance between the center of the central fringe and the center of the first bright fringe.

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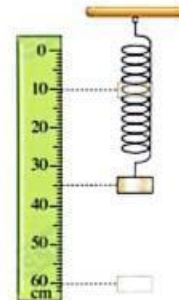
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**11** A body is suspended in a vertical spring coil besides a ruler where it vibrates between the marks 10 cm, 60 cm. **calculate :**

- (a) The amplitude of vibration of the body.
- (b) The distance covered by the body during two vibrations.



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**12** It is easier to see your reflected image on the glass window of a lighted room at night when the outside is dark than seeing your reflected image in daytime. **Explain.**

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