

DPP

DAILY PRACTICE PROBLEMS

CLASS : XITH
DATE :

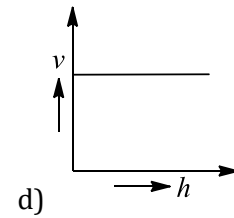
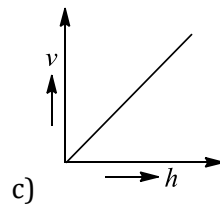
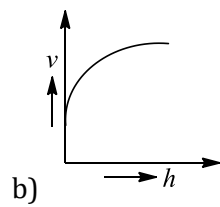
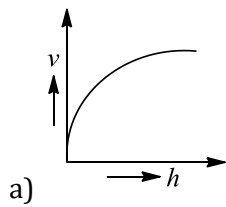
SUBJECT : PHYSICS
DPP NO. :4

Topic :- WAVES

- Two strings with mass per unit length of 9 gcm^{-1} and 25 gcm^{-1} are joined together in series. The reflection coefficient for the vibration waves are
a) $\frac{9}{25}$ b) $\frac{3}{5}$ c) $\frac{1}{16}$ d) $\frac{9}{16}$
- Light from two coherent sources of the same amplitude A and wavelength λ illuminates the screen. The intensity of the central maximum is I_0 . If the sources were incoherent, the intensity at the same point will be
a) $4I_0$ b) $2I_0$ c) I_0 d) $I_0/2$
- A table is revolving on its axis at 5 revolutions per second. A sound source of frequency 1000 Hz is fixed on the table at 70 cm from the axis. The minimum frequency heard by a listener standing at a distance from the table will be (speed of sound 352ms^{-1})
a) 1000 Hz b) 1066 Hz c) 941 Hz d) 352 Hz
- A train is approaching with velocity 25ms^{-1} towards a pedestrian standing on the track, frequency of horn of train is 1 kHz. Frequency heard by the pedestrian is ($v = 30 \text{ms}^{-1}$)
a) 1077 Hz b) 1167 Hz c) 985 Hz d) 954 Hz
- An engine moving towards a wall with a velocity 50ms^{-1} emits a note of 1.2 kHz. Speed of sound in air is 350ms^{-1} . The frequency of the note after reflection from the wall as heard by the driver of the engine is
a) 2.4 kHz b) 0.24 kHz c) 1.6 kHz d) 1.2 kHz
- A tuning fork of frequency 340 Hz is vibrated just above the tube of 120 cm height. Water is poured slowly in the tube, what is the minimum height of water necessary for the resonance?
a) 45 cm b) 30 cm c) 35 cm d) 25 cm
- When a tuning fork produces sound waves in air, which one of the following is same in the material of tuning fork as well as in air
a) Wavelength b) Frequency c) Velocity d) Amplitude

8. The frequency of a sonometer wire is 100 Hz. When the weights producing the tension are completely immersed in water, the frequency becomes 80 Hz and on immersing the weights in a certain liquid, the frequency becomes 60 Hz. The specific gravity of the liquid is
 a) 1.42 b) 1.77 c) 1.21 d) 1.82
9. A stone is dropped into a lake from a tower 500 metre high. The sound of the splash will be heard by the man approximately after
 a) 11.5 seconds b) 21 seconds c) 10 seconds d) 14 seconds
10. A racing car moving towards a cliff sounds its horn. The drivers observe that the sound reflected from the cliff has a pitch one octave higher than the actual sound of the horn. If v = the velocity of sound, the velocity of the car is
 a) $v/\sqrt{2}$ b) $v/2$ c) $v/3$ d) $v/4$
11. A hollow pipe of length 0.8m is closed at one end. At its open end a 0.5 m long uniform string is vibrating in its second harmonic and it resonates with the fundamental frequency of the pipe. If the tension in the wire is 50N and the speed of sound 320 ms^{-1} , the mass of the string is
 a) 5 g b) 10 g c) 20 g d) 40 g
12. The waves in which the particles of the medium vibrate in a direction perpendicular to the direction of wave motion is known as
 a) Transverse wave b) Longitudinal waves c) Propagated waves d) None of these
13. Two points on a travelling wave having frequency 500 Hz and velocity 300 ms^{-1} are 60° out of phase, then the minimum distance between two points is
 a) 0.2 b) 0.1 c) 0.5 d) 0.4
14. Beats are produced by two travelling waves each of loudness I and nearly equal frequencies n_1 and n_2 . The beat frequency will be and maximum loudness heard will be
 a) $(n_1 - n_2), 2I$ b) $(n_1 - n_2), 4I$ c) $(n_1 - n_2), 3I$ d) $(n_1 - n_2), I$
15. The equation $y = a \sin 2\pi \left(\frac{t}{T} - \frac{x}{\lambda} \right)$, where the symbols carry the usual meaning and a , T and λ are positive, represents a wave of
 a) Amplitude $2a$ b) Period T/λ
 c) Speed $x\lambda$ d) Speed (λ/T)
16. The length of an elastic string is a metre when the longitudinal tension is 4 N and b metre when the longitudinal tension is 5 N. the length of the string in metre when longitudinal tension is 9N, is
 a) $a-b$ b) $5b-4a$ c) $2b - \frac{1}{4}a$ d) $4a-3b$

17. A uniform rope having mass m hangs vertically from a rigid support. A transverse wave pulse is produced at the lower end. The speed (v) of wave pulse varies with height h from the lower end as shown in figure.



18. Two wires made up of the same material are of equal length but their radii are in the ratio of 1:2. On stretching each of these two strings by the same tension, the ratio between the fundamental frequencies is

a) 1:4 b) 4:1 c) 2:1 d) 1:2

19. The speed of sound in a gas of density ρ at a pressure P is proportional to

a) $\left(\frac{p}{\rho}\right)^2$ b) $\left(\frac{p}{\rho}\right)^{3/2}$ c) $\sqrt{\frac{\rho}{p}}$ d) $\sqrt{\frac{p}{\rho}}$

20. Two waves of wavelength 1.00m and 1.01m produces 10 beats in 3s. What is the velocity of the wave?

a) 150 ms^{-1} b) 115.2 ms^{-1} c) 336.6 ms^{-1} d) 200 ms^{-1}

