PHYSICS

BOOKS - SAI PHYSICS (TELUGU ENGLISH)

WAVES

MCQ

1. Two coherent sources of intensity ratio $9:4$ produce interference. The intensity ratio of

maxima and minima of the interference pattern is

A. $13:5$

B. $5:1$

C. $25:1$

D. $3:2$

Answer: c

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2. Through a narrow slit of width 2 mm, diffraction pattern is formed on a screen kept at a distance 2 m from the slit. The wavelength of the light used is 6330 A and falls normal to the slit and screen. Then, the distance between the two minima on either side of the central maximum is

A. 12.7 mm

B. 1.27 mm

C. 2.532 mm

D. 25.3 mm

Answer: b

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3. In a double slit interference experiment, the fringe width obtained with a light of wavelength 5900 A was 1.2 mm for parallel narrow slits placed 2 mm apart. In this arrangement if the slit separation is increased

by one-and-half times the previous value, then the fringe width is

A. 0.9 mm

B. 0.8 mm

C. 1.8 mm

D. 1.6 mm

Answer: b

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4. Two coherent point sources S, and S, vibrating in phase emit light of wavelength X. The separation between them is 2X as shown in figure. The first bright fringe is formed at P due to interference on a screen placed at a distance D from S1 $(D > > A)$, then OP is

A. $\sqrt{D}$

B. 1.5D

C. $\sqrt{3}D$

D. 2D

Answer: c

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5. Calculate the wavelength of the K_a line for z = 31, when $a = 5 \times 10^7 Hz^{\frac{1}{2}}$ for a characteristic X-ray spectrum.

A. $1.33\overset{\circ}{A}$

B. 1.33nm

C. $133 \times 10^{-10} m$

D. 133nm

Answer: a

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6. In the Young's double slit experiment, the resultant intensity at a point on the screen is 75% of the maximum intensity of the bright fringe. Then the phase difference between the two interfering rays at that point is

A. $\frac{\pi}{6}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{3}$

D. $\frac{\pi}{2}$

Answer: c

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7. In an optical fibre, core and cladding were made with materials of refractive indices 1.5 and 1.414 respectively. To observe total

internal reflection, what will be the range of incident angle with the axis of optical fibre?

A. $0^\circ - 60^\circ$

B. $0^\circ - 48^\circ$

C. $0^\circ - 30^\circ$

D. $0^\circ - 82^\circ$

Answer: c

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8. The diameter of objective of a telescope is 1 m. Its resolving limit for the light of wavelength 4538 $\overset{\circ}{A}$, will be

A. $5.54 \times 10^{-7} rad$

B. $2.54 \times 10^{-4} rad$

C. $6.54 \times 10^{-7} rad$

D. None of these

Answer: a

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9. Two coherent sources whose intensity ratio is $64:1$ produce interference fringes. The ratio of intensities of maximum and minima is

A. $9:7$

B. $8:1$

C. $81:49$

D. $81:7$

Answer: c

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10. In the young's double slit experiment, the intensities at two points $P(1)$ and P_2 on the screen are respectively I_1 and I_2. If P_1 is located at the centre of a bright fringe and P_2 is located at a distance equal to a quarter of fringe width from P_1, then $\frac{I_1}{I_2}$ is

A. 2

B. $\frac{1}{2}$

C. 4

D. 16

Answer: a

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11. In young's double slit experiment, the 10th maximum of wavelength λ_1, is at a distance of y_1 from the central maximum. When the wavelength of the source is changed to λ_2, 5^{th} maximum is at a distance of y_2 from its central maximum. The ratio $\left(\frac{y_1}{y_2}\right)$ is

A. $\frac{2\lambda_1}{\lambda_2}$

B. $\frac{2\lambda_2}{\lambda_1}$

C. $\frac{\lambda_1}{2\lambda_2}$

D. $\frac{\lambda_2}{2\lambda_1}$

Answer: a

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12. Four light sources produce the following four waves

(i) $y_1 = a\sin(\omega t + \phi_1)$

(ii) $y_2 = a\sin 2\omega t$

(iii) $y_3 = a' \sin(\omega t + \phi_2)$

(iv) $y_1 = a \sin(\omega t + \phi_1)$

Superposition of which two waves give rise to interference?

A. (i)and(ii)

B. (ii) and (iii)

C. (i) and (iii)

D. (iii) and (iv)

Answer: c

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13. Statement (S): Using Huygen's eyepiece measurement can be taken but are not correct.

Reason (R): The cross wires, scale and final image are not magnified proportionately because the image of the object is magnified by two lenses, whereas the cross wire scale is magnified by one lens only.

A. Both (A) and (R) are true, (R) explains (A)

B. Both (A) and (R) are true, but (R) cannot explains (A)

C. Only (A) is correct, but is wrong

D. Only (A) is correct, but is wrong

Answer: a

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14. If Fraunhofer diffraction experiment, L is the distance between screen and the obstacle, b is the size of obstacle and X is wavelength of

incident light. The general condition for the applicability of Fraunhofer diffraction is

A. $\frac{b^2}{L\lambda} > > 1$

B. $\frac{b^2}{L\lambda} = 1$

C. $\frac{b^2}{L\lambda} < < 1$

D. $\frac{b^2}{L\lambda} \neq 1$

Answer: c

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15. In Huygen's eyepiece

A. The cross wires are outside the eyepiece

B. Condition for achromatism is satisfied

C. Condition for minimum spherical aberration is not satisfied

D. The image formed by the objective is a virtual image

Answer: b

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16. In Young's double slit experiment, first slit has width four times the width of the second slit. The ratio of the maximum intensity to the minimum intensity in the interference fringe system is

A. $2:1$

B. $4:1$

C. $9:1$

D. $8:1$

Answer: c

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17. A light ray of wavelength X is passing through a pin hole of diameter D and the effect is observed on a screen placed at a distance L from the pin hole. The approximation of geometrical optics are applicable if

A. $D \leq \lambda$

B. $\frac{L\lambda}{D^2} = 1$

C. $\frac{L\lambda}{D^2} > > 1$

D. $\frac{L\lambda}{D^2} < < 1$

Answer: c

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18. Consider the following statements A and B and identify the correct answer.

A. Fresnel's diffraction pattern occurs when the source of light or the screen on which the

diffraction pattern is seen or when both are the finite distance from the aperture.

B. Diffracted light can be used to estimate the helical structure of nuclei acids.

A. A and B are true

B. A and B are false

C. A is true but B is false

D. A is false but B is true

Answer: c

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19. In Young's double slit experiment, an interference pattern is obtained on a screen by a light of wavelength 6000 $\mathring{A}$ coming from the coherent sources S_1 and S_2. At certain point P on the screen third dark fringe is formed. Then, the path difference $S_1P - S_2P$ in micron is

A. 0.75

B. 1.5

C. 3

D. 4.5

Answer: b

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20. Consider the following statements A and B. Identify the correct choice in the given answer

A. The refractive index of the extraordinary ray depends on the angle of incidence in the double refraction.

B. The vibration of light waves acquire one

sided ness of both ordinary and extraordinary rays in double refraction.

A. A and B are wrong

B. A and B are correct

C. A is correct B is wrong

D. A is wrong B is correct

Answer: b

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21. In Young's double slit interference experiment the wavelength of light used is 6000 $\overset{\circ}{A}$ .If the path difference between waves reaching a point P on the screen is 1.5μ, then at that point P.

A. Second bright band occurs

B. Second dark band occurs

C. Third dark band occurs

D. Third bright band occurs

Answer: c

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22. Light waves producing interference have their amplitudes in the ratio $3:2$. The intensity ratio of maximum and minimum of interference fringes is

A. $36:1$

B. $9:4$

C. $25:1$

D. $6:4$

Answer: c

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23. The difference in the number of wavelengths, when yellow light propagates through air and vacuum columns of the same thickness, is one. The thickness of the air column is: (Refractive index of air $\mu_a = 1.0003$,Wavelength of yellow light in vacuum = 6000 $\overset{\circ}{A}$)

A. 1.8 mm

B. 2 mm

C. 2 cm

D. 2.2 cm

Answer: b

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Problems

1. A tanserve wave is repsemted by the equation $y = 2\sin(30t - 40x)$ and the measerments of distances are in meters, then the velocity of propagation is

A. $15ms^{-1}$

B. $0.75ms^{-1}$

C. $3.75ms^{-1}$

D. $30ms^{-1}$

Answer: B

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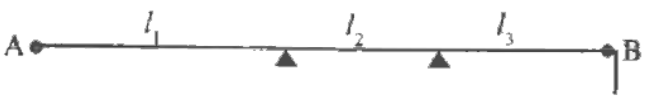
2. A thin wire of length of 99cm is fixed at both ends as shoen in the figure. The wire is kept under a tension and is divided into three segments of lengths l_1,l_2 and l_3 as shown in figure. When the wire is made to vibrate, the segments vibrate repectively with their fundamental frequenices in the ratio 1:2:3. then, length l_1,$l_2$and l_3 of the segments respectively are (in cm).



A. 27,54,18

B. 18,27,54

C. 54,27,18

D. 27,9,14

Answer: C

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3. An air column in tun=be 32cm long, closed at one end, is in resonace with a tuning fork. The air column in another tube, open at both

ends, of length 66cm is in resonance with another tuning frok.When those two tuning forks are sounded together , they produce 8 beats per second together, they produce 8 beats per second. then the frquencies of the twpo tuning forks are, (consider fundamental frequencies only)

A. 250 Hz,258 Hz

B. 240 Hz,248 Hz

C. 264 Hz,256 Hz

D. 280 Hz,272 Hz

Answer: C

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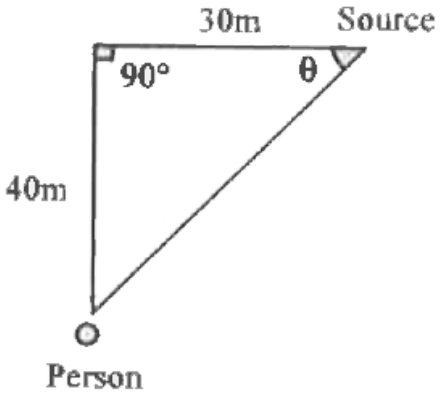
4. A source of sound of frequency 640 Hz is moving at a velocity of $\frac{100}{3} m/s$ along a road, and is at an instant 30m away from pint A on the road (as shown in figure. A person standing at O, 40m away from the road hears sound of apperent frequency v'. The value of v'

is (velocity of sound =$340 m / s$)



A. 620 Hz

B. 680 Hz

C. 720 Hz

D. 840 Hz

Answer: B

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5. A unifrom rope of mass 0.1kg and length 2.45 m hangs from a rigid support. The time taken by the transverse wave formed in the rope to travel through the full length of the rope is (Assume g= $= 9.8m/s^2$)

A. 0.5 s

B. 1.6 s

C. 1.2 s

D. 1.0 s

Answer: D

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6. When a vibrating tuning fork is placed on a sound box of a sonometer, 8 beats per second are heard when the length of the sonometer wire is kept at 101cm or 100cm. Then the frequency of the tuning frok is (consider that the tension in the wire is kept constant)

A. 1616 Hz

B. 1608 Hz

C. 1632 Hz

D. 1600 Hz

Answer: B

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7. The wavelength of two notes in air are $\frac{40}{195}m$ and $\frac{40}{193}m$. Each note produces 9 beats per second separately with third note of

fixed frequency. The velocity of sound in air in m/s is

A. 360

B. 320

C. 300

D. 340

Answer: A

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8. Two unifrom strectched strings A and B, made of steel, are vibrating under the same tension. If the first overtone of A is equal to the second overtone of B and if the radius of A is twice that of B, the ratio of the lengths of the strings is

A. $2:3$

B. $1:2$

C. $1.\ :3$

D. $1:4$

Answer: C

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9. Two soureces A and B are sending notes of frequency 680Hz.A listener moves from A to B with a constant velocity u. If the speed of sound in air is $360ms^{-1}$, what must be the value of u so that he hears 10 beats per second?

A. $2.0ms^{-1}$

B. $2.5ms^{-1}$

C. $3.0ms^{-1}$

D. $3.5ms^{-1}$

Answer: B

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10. Two identical piano wires have a fundamental frequency of 600 cycle per second when kept under the same tension. What fractional increase in the tension of one

wire will lead to the occurrence of 6 beats per second when both wires vibrate simultaneously?

A. 0.01

B. 0.02

C. 0.03

D. 0.04

Answer: B

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11. When sound wave of wavelength λ is propagating in a medium, the maximum velocity of the particle is equal to the wave velocity. The amplitude of wave is

A. λ

B. $\frac{\lambda}{2}$

C. $\frac{\lambda}{2\pi}$

D. $\frac{\lambda}{4\pi}$

Answer: C

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12. A car is moving with a speed of the $72Kmh^{-1}$ towards a hill. Car blows horn at a distance of 1800 m from the hill. If echo is heard after 10 s.the speed of sound $\left(\text{in}ms^{-1}\right)$ is

A. 300

B. 320

C. 340

D. 360

Answer: C

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13. A whistle of frequency 540 Hz rotates in a horizontal circle of radius 2 m at an angular speed of 15 rad//s. The highest frequency heard by a listener at rest with respect to the centre of circle (velocity of sound in air = $300ms^{-1}$)

A. 590 Hz

B. 594 Hz

C. 598 Hz

D. 602 Hz

Answer: B

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14. A segment of wire vibrates with a fundamental frequency of 450 Hz under a tension of 9Kg-wt.Then, tension at which the

fundamental frequency of the same wire becomes 900 Hz is

A. $36Kg - wt$

B. $27Kg - wt$

C. $18Kg - wt$

D. $72Kg - wt$

Answer: A

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15. Two strings A and B of lengths,$L_A = 80cm$ and $L_B = xcm$ respectively are used separately in a sonometer. The ratio of their densities (ρ_A / ρ_B) is 0.81. The diameter of B is one-half that of A.if the strings have the same tension and fundamental frequency the value of x is

A. 33

B. 102

C. 144

D. 130

Answer: C

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16. An observer is standing 500 m away from a vertical hill. Starting between the observer and the hill, a police van sounding a siren of frequency 1000 Hz moves towards the hill with a uniform speed. If the frequency of the sound heard directly from the siren is 970 Hz, the

frequency of the sound heard after reflection from the hill (in Hz) is about,(velocity of sound = $330ms^{-1}$

A. 1042

B. 1032

C. 1022

D. 1012

Answer: B

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17. A vehicle sounding a whistle of frequency 256Hz is moving on a straight road,towards a hill with velocity of $10ms^{-1}$. The number of beats per second observed by a person travelling in the vehicle is (velocity of sound = $300ms^{-1}$

A. zero

B. 10

C. 14

D. 16

Answer: D

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18. A transverse wave propagating on a stretched string of linear density $3 \times 10^{-4} kg - m^{-1}$ is represented by the equation

$$y = 0.2 \sin(1.5x + 60t)$$

Where x is in metre and t is in second. The tension in the string (in Newton) is

A. 0.24

B. 0.48

C. 1.2

D. 1.8

Answer: B

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19. The wavelength of two nodes in air are $\frac{36}{195}$ m and $\frac{36}{193}$ m. Each node products $10 beats / s$ seprately with a third node of fixed

frequency. The velocity of sound in air in m/s is

A. 330

B. 340

C. 350

D. 360

Answer: D

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20. An iron load of 2Kg is suspended in the air from the free end of a sonometer wire of length 1m.A tuning frok of frequency 256 Hz, is in resonace with $\frac{1}{\sqrt{7}}$ times the length of the sonometer wire. If the looad is immersed in water, the length of the wire in metre that will be in resonance with the same tuning fork is (specific gravity of iron=8)

A. $\sqrt{8}$

B. $\sqrt{6}$

C. $\frac{1}{\sqrt{6}}$

D. $\frac{1}{\sqrt{8}}$

Answer: D

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21. Two unifrom strectched strings A and B, made of steel, are vibrating under the same tension. If the first overtone of A is equal to the second overtone of B and if the radius of A is twice that of B, the ratio of the lengths of the strings is

A. $1:2$

B. $1:3$

C. $1:4$

D. $1:5$

Answer: B

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22. If the length of a stretched string is shortened by 40 % and the tension is

increased by 44% then ratio of the final and initial fundamental frequencies is

A. $2:1$

B. $3:2$

C. $3:4$

D. $1:3$

Answer: A

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23. An auditorium has volume of $10^5 m^3$ and surface area of absorption $2 \times 10^4 m^2$. Its average absorption coefficient is 0.2. The reverberation time of the auditorium is second is

A. 6.5

B. 5.5

C. 4.25

D. 3.25

Answer: C

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24. A metallic wire with tension T and at temperature 30^0C vibrates with its fundamental frequency of 1 kHz. The same wire with the same tension but at 10^0C temperature vibrates with a fundamental frequency of 1.001 kHz. The coefficient of linear expansion of the wire is

A. $2 \times 10^{-4} / {}^\circ C$

B. $1.5 \times 10^{-4} / {}^\circ C$

C. $1 \times 10^{-4} / {}^{\circ}C$

D. $0.5 \times 10^{-4} / {}^{\circ}C$

Answer: D

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25. The sound waves of wavelength 5 m and 6 m formed 30 beats in 3 s. The velocity of sound is

A. $300 ms^{-1}$

B. $310ms^{-1}$

C. $320ms^{-1}$

D. $330ms^{-1}$

Answer: A

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26. In order to double the frequency of the fundamental note emitted by a streched string, the length is reduced to $\frac{3}{4}th$ of the

original length and the tension is chaged. The factor by which the tension is to be changed is

A. $\frac{3}{8}$

B. $\frac{2}{3}$

C. $\frac{8}{9}$

D. $\frac{9}{4}$

Answer: D

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27. A steel meter scale is to be ruled so that millimetre intervals are accurate within about 5×10^{-5} m at a certain temperature. The maximum temperture variation allowable during the ruling is (coefficient of linear expansion of steel =$10 \times 10^{-6} K^{-1}$

A. $2^0 C$

B. $5^0 C$

C. $7^0 C$

D. $10^0 C$

Answer: B

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28. The frequency of a stetched unifrom wire under tension is in resonance with the fundamental frequency of closed tube. If the tension in the wire is increased by 8 N, it is in resonance with the first overtone of the closed tube. The initial tension in the wire is

A. 1 N

B. 4 N

C. 8 N

D. 16 N

Answer: A

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29. If vibrating tuning fork of frequency 255Hz is moving with a velocity $4ms^{-1}$ towards the wall the number of beats heard per second is (speed of sound in air = $340ms^{-1}$).

A. 3

B. 4

C. 5

D. 6

Answer: A

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30. A source producing sound of frequency 170 Hz is approachig a stationary observed with a velocity of $17ms^{-1}$. The apparent change in

the wavelength of sound heard by the observer is (speed of sound in air =$340ms^{-1}$)

A. 0.1 m

B. 0.2 m

C. 0.4 m

D. 0.5 m

Answer: A

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31. In a medium in which a transverse progressive wave is travelling to the phase difference between two points with a distance of separation is 1.25 cm is $\frac{\pi}{4}$. If the frequency of wave is 1000 Hz, its velocity will be

A. $10^4 ms^{-1}$

B. $125 ms^{-1}$

C. $100 ms^{-1}$

D. $10 ms^{-1}$

Answer: C

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32. A glass tube 1.5m long and open at both ends is immered vertically in a water tank completely. A tuning fork of 600 Hz is vibrated and kept at the upper end of tube is gradually raised out of water. The total number of resonances heard before when the tube comes out of water, taking $\vee = 330ms^{-1}$.

A. 12

B. 6

C. 8

D. 4

Answer: B

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33. A car with a horn of frequency 620 Hz, travels towards a large wall with a speed $20ms^{-1}$. If velocity of sound is $330ms^{-1}$ the frequency of echo of sound of horn as heard by driver

A. 700 Hz

B. 660 Hz

C. 620 Hz

D. 550 Hz

Answer: A

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34. A person standing on the edge of well throws a stone vericall upwards with an initial velocity $5ms^{-1}$. The stone goes up, comes

down and falls in the well making a sound. If the person hears the sound 3 s after throwing , the water is at a depth from ground given by (neglect time of travel for the sound and take g=$10ms^{-2}$)

A. 1.25 m

B. 21.25 m

C. 30 m

D. 32.50 m

Answer: C

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35. The equation of wave is

$y = 1.0 \cos 2\pi \left(\frac{t}{0.02} - \frac{x}{10} \right)$ where t is in second. The frequency of the wave is

A. 50 Hz

B. 315 Hz

C. 10 Hz

D. 63 Hz

Answer: A

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36. A string in a musical instrument is 50 cm long and its fundamental frequency is 270 Hz. If the desired frequency of 1000 Hz is to be produced, the required string length is

A. 13.5 cm

B. 2.7 cm

C. 5.4 cm

D. 10.8 cm

Answer: A

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37. A man stands in front of a hillock and fires a gun. He hears an echo after 1.5s. The distance of the hillock from the man is (velocity of sound in air is $330ms^{-1}$)

A. 220 m

B. 247.5 m

C. 268.5 m

D. 292.5 m

Answer: B

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38. An organ pipe P_1 closed at one end vibrating in its first overtone and another pipi P_2, open at both ends vibrating in its third overtone are in resonance with a given tuining fork. Then, the ration of lengths of P_1 and P_2 respectively are given by

A. $1:1$

B. $1:3$

C. $3:8$

D. $3:4$

Answer: C

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39. The source and an observer move away from each other, each with a velocity of $10m/s$, with respect to ground, If the obsever

find the frequency of sound coming from the source as 1950Hz, the original frequency of the source is (assume velocity of sound in air = $340ms^{-1}$)

A. 1950 Hz

B. 2068 Hz

C. 1832 Hz

D. 2186 Hz

Answer: B

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40. The length of the closed pipe whose fundamental frequency is equal to yhat of open pipe of 60cm, length is

A. 20 cm

B. 24 cm

C. 28 cm

D. 30 cm

Answer: D

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41. An observer is moving away from a sound source of frequency 100 Hz. If the obsever is moving with a velocity $49ms^{-1}$ and the speed of sound in air is $330ms^{-1}$. The observed frequency is

A. 85 Hz

B. 91 Hz

C. 100 Hz

D. 149 Hz

Answer: A

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42. A wave is given by the equation

$y = A \sin 2\pi(\mathrm{f}t - x / \lambda)$

Its maximum particle velocity is four times the wave velocity, when λ is

A. πA

B. $\pi A / 2$

C. $\pi A / 4$

D. $\pi A / 8$

Answer: B

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43. Stationary waves are setup in an air column. If the velocity of sound in air is $330 ms^{-1}$ and frequency is 165 Hz, the distance between the nodes is

A. 2 m

B. 1 m

C. 0.5 m

D. 4 m

Answer: B

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44. An observer is moving away from a source of sound of frequency 100 Hz at aspeed of $33ms^{-1}$. If the spped of the sound in air is $330ms^{-1}$ and the observed frequency is

A. 90 Hz

B. 100 Hz

C. 91 Hz

D. 110 Hz

Answer: A

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45. Which of the following satements is not true for the velocity of sound in gas?

A. Independence of pressure

B. Increases with increasing temperature

C. Dependent on molecular weight

D. Greater in dry gas than in moist gas

Answer: D

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46. Two identical stinged instruments have a frequency of 100Hz. The tension in one of

them is increased by 4%.If they are now sounded together the number of $beat/s$ is

A. 1

B. 8

C. 4

D. 2

Answer: D

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47. The phase difference between two vibrating particles separated by a distance of 11 M into medium through which a progressive wave is travelling is 1320^0 If the frequency of the disturbance is 105 Hz, the phase velocity of the progressive wave in ms^{-1}.

A. 315

B. 330

C. 350

D. 300

Answer: A

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48. A closed pipe 1 m long, emitting its second overtone, is in unison with an open pipe emitting its third overtone. The length of the open pipe will be

A. 1.2m

B. 1.6m

C. 2.5m

D. 3.2m

Answer: B

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49. When a wave travels in a medium the particles displacement is given by the equation

$$y(x, t) = 0.03 \sin \pi(2t - 0.01x)$$

Where y and x are in metre and t in second. The wavelengths of the wave is

A. 10m

B. 20m

C. 100m

D. 200m

Answer: D

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50. A tuning fork of frequency 392 Hz, resonates with 50 cm length of a string under tension T. If the length of the string is

decreased by 2% keeping the tension constant the number of beats heard when the string and the tuning fork are made to vibrate simultaneously is

A. 8

B. 12

C. 4

D. 6

Answer: A

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51. In rsonace column experiment with a closed pipe, the first, second and third resonance lengths l_1,l_2,l_3 respectively bear the relationship

A. $l_3 = 2l_2 = 4l_1$

B. $(l_3 - l_2) = (l_2 - l_1)$

C. $l_3 = \frac{5}{3}l_2 = 5l_1$

D. $(l_3 - l_2) = 2(l_2 - l_1)$

Answer: B

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52. When a wave travels in a medium the particles displacement is given by the equation

$y(x, t) = 0.03 \sin \pi(2t - 0.01x)$

Where y and x are in metre and t in second. The wavelengths of the wave is

A. 200m

B. 100m

C. 300m

D. 400m

Answer: A

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53. Using the same tuning fork first resonace lengths wre observed with an organ pipe open at both ends and also with an organ pipe closed at one end, as l_1 and l_2 respectively. The ratio $l_1 : l_2$ will be

A. $1:1$

B. $2:1$

C. $1:2$

D. $3:1$

Answer: B

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54. A source of sound emitting sound with frequency 540Hz approaches a staionary observer with a speed of $30ms^{-1}$. If velocity of

sound is taken as $330ms^{-1}$, the frequency as heard by the observer will be

A. 194 Hz

B. 294 Hz

C. 394 Hz

D. 594 Hz

Answer: D

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55. The velocity of propagtion of sound is $330ms^{-1}$, in ait. If the third harmonic of the fundamental that can be exerted in an open ended tube 450 Hz, the length of the tube is

A. 3.3m

B. 1.1m

C. 2.2m

D. 4.5m

Answer: B

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56. Let $\vee_s$ be the speed of the source emitting waves, n the actual frequency of the source of sound, v the speed of the sound in the medium and n' the frequency of sound waves as percevied by a stationary observer to whom the source of sound is approaching. The formula to calculate for n' is

A. $n' = n\left(1 - \frac{\vee_s}{\vee}\right)$

B. $n' = n/\left(1 - \frac{\vee_s}{\vee}\right)$

C. $n' = n/\left(1 + \frac{\vee_s}{\vee}\right)$

D. $n' = n$

Answer: B

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57. A certain number of beats are heard when two tuning forks of natural frequencies n_1 and n_2 are sounded together. The number of beats heard when one of the fork is loaded

A. Increases

B. Decreases

C. Remains constant

D. May increase or decrease

Answer: D

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58. A body vibrating with a certain frequency sends waves of wavelength 15 cm in a medium

A and 20 cm in medium B. If $\vee$ of waves in A is $120ms^{-1}$. That in B will be

A. $196ms^{-1}$

B. $160ms^{-1}$

C. $360ms^{-1}$

D. $260ms^{-1}$

Answer: B

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