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Dept. of physics

Degloor College,Degloor

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1. Relation between wave velocity(v), frequency (n) and wavelength (λ) is:

- a) $v = n\lambda$
- b) $v = \frac{n}{\lambda}$
- c) $v = \frac{\lambda}{n}$
- d) $v = n^2\lambda$

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2. The general equation of simple harmonic progressive wave is :

- a) $y = a \sin \frac{\pi}{\lambda}(vt - x)$
- b) $y = a \sin \frac{2\pi}{\lambda}(vt - x)$
- c) $y = a \sin \frac{\pi}{2\lambda}(vt - x)$
- d) $y = a \sin \frac{3\pi}{\lambda}(vt - x)$

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- 3. The energy of progressive wave is :
- a) Partly kinetic
- b) Partly potential
- c) Partly kinetic and partly potential
- d) Neither kinetic nor potential

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- 4. Velocity of transverse waves along stretched string is:
- a) $v = \frac{T}{m}$
- b) $v = \frac{m}{T}$
- c) $v = \sqrt{\frac{m}{T}}$
- d) $v = \sqrt{\frac{T}{m}}$

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- 5.When a simple harmonic progressive wave is propagated trough
- medium, the displacement of a particle in cm at any instant is given by
- $y = 10 \sin \frac{2\pi}{100}(36000t - 20)$ Then amplitude of wave is:
- a) 100cm
- b) 20 cm
- c) 36000cm
- d) 10cm
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- 6.The fundamental frequency of vibration of stretched string is:
- a) $n = \frac{1}{2l}\sqrt{\frac{T}{m}}$
- b) $n = \frac{1}{l}\sqrt{\frac{T}{m}}$
- c) $n = \frac{1}{3l}\sqrt{\frac{T}{m}}$
- d) $n = \frac{1}{4l}\sqrt{\frac{T}{m}}$

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- 7. Progressive wave can transfer:
- a) Only matter
- b) Only energy
- c) Both energy and matter
- d) Neither energy nor matter

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- 8. The period of vibration of stretched string is:
- a) $T = l\sqrt{\frac{m}{T}}$
- b) $T = 2l\sqrt{\frac{m}{T}}$
- c) $T = 3l\sqrt{\frac{m}{T}}$
- d) $T = 4l\sqrt{\frac{m}{T}}$

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- 9.The relation between particle velocity (U)and wave velocity (v) is:
- a) $U = -v(\frac{dy}{dt})$
- b) $U = -v^2(\frac{dy}{dx})$
- c) $U = -v(\frac{dy}{dx})$
- d) None of above is correct

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- 10. Differential equation of wave motion is:

- a) $\frac{d^2y}{dx^2} = v^2 \frac{d^2y}{dt^2}$
- b) $\frac{d^2y}{dt^2} = v^2 \frac{d^2y}{dx^2}$
- c) $\frac{d^2y}{dx^2} = v \frac{dy}{dt}$
- d) $\frac{d^2y}{dt^2} = v \frac{d^2y}{dx^2}$

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- 11. In stationary waves the distance between two adjacent nodes is:
- a) λ
- b) $\frac{\lambda}{4}$
- c) $\frac{\lambda}{2}$
- d) $\frac{\lambda}{3}$

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- 12. In stationary waves, nodes are the points of …
- a) Maximum displacement
- b) Adequate displacement
- c) Moderate displacement
- d) Zero displacement

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- 13. In stationary waves, amplitude of vibration gradually ……from
- Node to antinode
- a) Decreases
- b) Increases
- c) Remains same
- d) None of above is correct

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- 14. When waves are setup in a fluid, the excess of pressure is given by:
  - a) $p = -E\frac{dy}{dx}$
  - b) $p = -E\frac{dy}{dt}$
  - c) $p = -E\frac{d^2y}{dt^2}$
  - d) $p = -E\frac{d^2y}{dx^2}$

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- 15. In a stationary wave at antinodes:
- a) Change in Pressure and density is greater than normal
- b) Change in Pressure and density is less than normal
- c) No change in pressure and density
- d) All above are correct

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- 16. Which of the following statement about stationary waves is/are correct.?
  - a) Stationary waves transfer energy through the medium
  - b) Stationary waves do not transfer energy through the medium
  - c) Stationary waves continuously travel in a specific direction
  - d) Stationary waves are progressive waves

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- 17. The total energy per wavelength in stationary wave is …… that in progressive wave.
- a) Equal
- b) Half
- c) Double
- d) Quarter

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- 18. Stationary waves are formed in a medium such that the distance between two successive nodes is found to be 0.8cm. What is the distance between two successive antinodes?
- a) 0.8cm
- b) 0.4cm
- c) 1.6cm
- d) 0.2cm

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- 19. In a stationary wave at nodes, the velocity of particle is:
- a) Maximum
- b) Always Zero
- c) Never Zero
- d) Between Zero and maximum

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- 20. $y = 2a\cos\frac{2\pi x}{\lambda}\sin\frac{2\pi vt}{\lambda}$ is the equation of …
- a) Stationary waves
- b) Progressive waves
- c) Beats
- d) None of above

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- 21. Resonance is the ….
- a) Special case of free damped vibration
- b) Special case of free undamped vibration
- c) Special case of forced vibration
- d) None of above correct

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- 22. If pendulum is displaced in vacuum, its amplitude of oscillation:
- a) Gradually decreases with time
- b) Remains constant
- c) Gradually increases with time
- d) Initially increases then decreases

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- 23 When a body is maintained in a state of vibration by a periodic force, the type of vibration is:
- a) Forced vibration
- b) Free damped vibration
- c) Free undamped vibration
- d) None of above correct

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- 24. The existence of damping can..
- a) Decreases in amplitude
- b) Increases in amplitude
- c) Maintain constant in amplitude
- d) None of above are correct

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- 25 At resonance amplitude of oscillation is
- a) Zero
- b) Minimum
- c) In between zero and maximum
- d) Maximum

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- 26. The differential equation of free undamped vibration is:
- a) $\frac{d^2y}{dt^2} - n^2y = 0$
- b) $\frac{d^2y}{dt^2} + 2k\frac{dy}{dt} + n^2y = 0$
- c) $\frac{d^2y}{dt^2} + n^2y = 0$
- d) $\frac{d^2y}{dt^2} + 2k\frac{dy}{dt} = 0$

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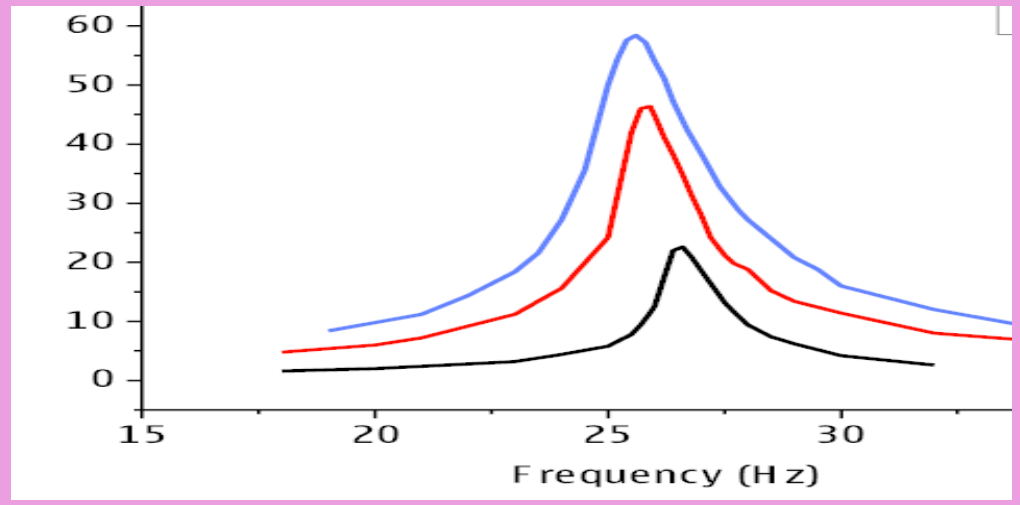
27. In a given figure, sharpness of resonance is maximum for



a) Red curve (Middle curve)
b) Black curve (Lower curve)
c) Blue curve (Upper curve)
d) All curves have equal sharpness

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- 28. Persistence of sound even after the source has stopped is known as:
- a) Resonance
- b) Absorption coefficient
- c) Ultrasonic
- d) Reverberation

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- 29. Reverberation time should have
- a) Very much lower value
- b) Optimum value
- c) Very high value
- d) None of above correct

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- 30. The phenomenon in which frequency of free vibration is exactly equal to frequency of forced vibration is known as:
- a) Free vibration
- b) Damped vibration
- c) Forced vibration
- d) Resonance

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- 31.When body vibrating freely has no resistance offered to its motion, its amplitude…
- a) Increases with time
- b) Decreases with time
- c) Remains constant
- d) Initially increases then decreases

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- 32. When damping is small, resonance is :
- a) Sharp
- b) Flat
- c) Zero
- d) None of above

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- 33. Sound waves of frequency lower than the audible limit are called:
- a) Infrasonic
- b) Sonic
- c) Audible
- d) Ultrasonic
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- 34. Ultrasonic waves can be produced by:
- a) Galton Whistle Method
- b) Magnetostriction Oscillator
- c) Piezoelectric oscillator
- d) By all above method

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- 35. The velocity of ultrasonic waves through liquid and gases at various temperature is measured by:
- a) Acoustic grating
- b) Magnetostriction Oscillator
- c) Piezoelectric oscillator
- d) By all above method

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- 36. Sabine's reverberation time formula is:
- a) $t_1 = \frac{\sum \alpha A}{0.158V}$
- b) $t_1 = \frac{\sum \alpha A}{1.58V}$
- c) $t_1 = \frac{0.158V}{\sum \alpha A}$
- d) $t_1 = \frac{1.58}{\sum \alpha A}$

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- 37. Acoustics of an auditorium can be improved by:
- a) Hanging heavy curtains
- b) Having pictures and maps
- c) Having few open windows
- d) All above are correct

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- 38. The piezo electric effect is more pronounced found in crystals of:
- a) Quartz
- b) Tourmaline
- c) Rochellel salt
- d) In all above crystals

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- 39. Absorption coefficient of material is:
- a) $\alpha_2 = \frac{0.158V}{A}\left[\frac{t_1 - t_2}{t_1 t_2}\right]$
- b) $\alpha_2 = \frac{1.58V}{A}\left[\frac{t_1 - t_2}{t_1 t_2}\right]$
- c) $\alpha_2 = \frac{15.8V}{A}\left[\frac{t_1 - t_2}{t_1 t_2}\right]$
- d) $\alpha_2 = \frac{158V}{A}\left[\frac{t_1 - t_2}{t_1 t_2}\right]$

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40. The fundamental frequency of vibration of rod in piezo-electric oscillator is:

- a) $n = \frac{2l}{p}\sqrt{\frac{Y}{\rho}}$
- b) $n = \frac{l}{p}\sqrt{\frac{Y}{\rho}}$
- c) $n = \frac{p}{l}\sqrt{\frac{Y}{\rho}}$
- d) $n = \frac{p}{2l}\sqrt{\frac{Y}{\rho}}$