1. 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

2. 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

3 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

4. The existence of damping can..

   a) Decreases in amplitude

   b) Increases in amplitude

   c) Maintain constant in amplitude

   d) None of above are correct

5 At resonance amplitude of oscillation is

   a) Zero

b) Minimum

c) In between zero and maximum

d) Maximum

6. 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) $\frac{d^2y}{dt^2} + 2k\frac{dy}{dt} = 0$

7. Aperiodic motion is also called as:

a) Dead beat

b) Critically damped motion

c) Oscillatory motion

d) None of above correct

8. At resonance amplitude of forced vibration is:

a) $A_m = \frac{f^2}{2kn}$

b) $A_m = \frac{f^2}{kn}$

c) $A_m = \frac{f}{kn}$

d) $A_m = \frac{f}{2kn}$

9. 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

10. Period of free undamped vibration is :

a) $T = \pi\sqrt{\frac{m}{\mu}}$

b) $T = \frac{1}{2\pi}\sqrt{\frac{m}{\mu}}$

c) $T = 2\pi\sqrt{\frac{m}{\mu}}$

d) $T = \frac{1}{\pi}\sqrt{\frac{m}{\mu}}$

11.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) $v = n^2\lambda$

12 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) $y = a\sin\frac{3\pi}{\lambda}(vt - x)$

13. 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) $\frac{d^2y}{dt^2} = v \frac{d^2y}{dx^2}$

14. The energy of progressive wave is :

a) Partly kinetic

b) Partly potential

c) Partly kinetic and partly potential

d) Neither kinetic nor potential

15. 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) $v = \sqrt{\frac{T}{m}}$

16. 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

17. 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) $n = \frac{1}{4l}\sqrt{\frac{T}{m}}$

18. Progressive wave can transfer:

a) Only matter

b) Only energy

c) Both energy and matter

d) Neither energy nor matter

19. 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) $T = 4l\sqrt{\frac{m}{T}}$

20. 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

21. In stationary waves the distance between two adjacent nodes is:

a) λ

b) $\frac{\lambda}{4}$

c) $\frac{\lambda}{2}$

d) $\frac{\lambda}{3}$

22. In stationary waves, nodes are the points of …

a) Maximum displacement

b) Adequate displacement

c) Moderate displacement

d) Zero displacement

23. In stationary waves, amplitude of vibration gradually ……from

Node to antinode

a) Decreases

b) Increases

c) Remains same

d) None of above is correct

24. 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) $p = -E\frac{d^2y}{dx^2}$

25. 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

26. 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

27. The total energy per wavelength in stationary wave is …… that in progressive wave.

    a) Equal

    b) Half

    c) Double

    d) Quarter

28. 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

29. In a stationary wave at nodes, the velocity of particle is:

a) Maximum

b) Always Zero

c) Never Zero

d) Between Zero and maximum

30. $y = 2a\cos\frac{2\pi x}{\lambda}\sin\frac{2\pi vt}{\lambda}$ is the equation of …

a) Stationary waves

b) Progressive waves

c) Beats

d) None of above

31. Persistence of sound even after the source has stopped is known as:

a) Resonance

b) Absorption coefficient

c) Ultrasonic

d) Reverberation

32. Reverberation time should have

a) Very much lower value

b) Optimum value

c) Very high value

d) None of above correct

33. Sound waves of frequency lower than the audible limit are called:

a) Infrasonic

b) Sonic

c) Audible

d) Ultrasonic

34. Ultrasonic waves can be produced by:

a) Galton Whistle Method

b) Magnetostriction Oscillator

c) Piezoelectric oscillator

d) By all above method

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

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) $t_1 = \frac{1.58}{\sum \alpha A}$

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

38. The piezo electric effect is more pronounced found in crystals of:

a) Quartz

b) Tourmaline

c) Rochellel salt

d) In all above crystals

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) $\alpha_2 = \frac{158V}{A}\left[\frac{t_1 - t_2}{t_1 t_2}\right]$

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) $n = \frac{p}{2l}\sqrt{\frac{Y}{\rho}}$