

Name _____

Q. No. 1 Note: Select the Correct Option.

1. The maximum distance of vibrating body from the mean position when the body is executing SHM is called
a. displacement b. time period c. frequency d. amplitude
2. The sharpness of resonance is ----- proportional to damping
a. directly b. exponentially c. inversely d. not related
3. The wave form of body executing SHM is
a. pulsed wave b. sine wave c. square wave d. cosine wave
4. The time period of second pendulum is
a. 1 s b. 2 s c. 3 s d. 4 s
5. The formula for frequency of simple pendulum is
a. $1/2\pi \sqrt{l/g}$ b. $2\pi \sqrt{l/g}$ c. $2\pi \sqrt{g/l}$ d. $1/2\pi \sqrt{g/l}$
6. A simple harmonic oscillator completes 30 vibrations in 5 seconds. Its frequency is
a. 30 Hz b. 150 Hz c. 6 Hz d. 5 Hz
7. The process in which energy is dissipated from oscillation system is known as
a. Damping b. Conduction c. Convection d. Thermionic
8. The vibration of a factory floor caused by the running of heavy machinery is an example of
a. Forced vibration b. Free vibration c. both a&b d. None of these
9. $[T^{-1}]$ is the dimension of
a. Time b. Frequency c. Force d. Acceleration
10. Heating is produced in a microwave oven by the phenomena
a. Total Internal Reflection b. Refraction c. Resonance d. Dispersion
11. If mass of the bob of a pendulum is doubled, its period
a. becomes half b. becomes one third c. becomes double d. remains same
12. Time period of horizontal mass spring system is given by _____
a. $2\pi \sqrt{m/k}$ b. $2\pi \sqrt{k/m}$ c. $1/2\pi \sqrt{m/k}$ d. $1/2\pi \sqrt{k/m}$
13. A system under going forced vibrations is known as
a. simple pendulum b. simple harmonic oscillator c. 2nd pendulum d. Driven harmonic oscillator
14. Damping is a process whereby energy is ----- from the oscillating system
a. conserved b. dissipated c. both a&b d. none of these
15. If projection N starts its motion from upper extreme and subtends an angle of 45° , then total phase is
a. 45° b. 90° c. 120° d. 135°
16. The angular speed of the mass attached to a spring is _____
a. $1/2\pi \sqrt{m/k}$ b. $2\pi \sqrt{m/k}$ c. $\sqrt{m/k}$ d. $\sqrt{k/m}$
17. When a particle is moving along a circular path, its projection performs ----- along the diameter.
a. linear motion b. vibratory motion c. SHM d. rotatory motion
18. In SHM the velocity of a particle is maximum at
a. mean position b. extreme position c. between mean and extreme d. none of these
19. Time period of simple pendulum is independent of
a. mass b. length c. acceleration due to gravity d. restoring force
20. If $F = 0.08 \text{ N}$ and $x = 4 \text{ cm}$ then K is equal to
a. 8 N/m b. 6 N/m c. 4 N/m d. 2 N/m
21. The product of time period and frequency is
a. zero b. 1 c. π d. 2
22. The oscillation in which amplitude decreased steadily with the time are called
a. natural oscillations b. damped oscillations c. free oscillations d. forced oscillations
23. If time period of simple pendulum is 2s, its frequency will be
a. 1 Hz b. 1.5 Hz c. 0.5 Hz d. 2 Hz
24. The time period of simple pendulum depends upon
a. length of pendulum b. mass of bob c. amplitude of pendulum d. mass of thread
25. If the amplitude of the simple pendulum is doubled, its time period
a. becomes one half b. becomes one third c. becomes double d. remains constant
26. S.I unit of spring constant K are
a. m^{-1} b. N m^{-1} c. N m^{-2} d. N m^2
27. Length of simple pendulum whose time period is 1 s.
a. 0.25 m b. 25 m c. 100 m d. 0.25 cm
28. The wave form of a body performing SHM is
a. Square wave b. sine wave c. circular wave d. pulse
29. The force responsible for producing the vibratory motion in simple pendulum is
a. $mg \cos\theta$ b. $mg \sin\theta$ c. $mg \tan\theta$ d. mg
30. The amplitude of a body, performing SHM, at resonance
a. is maximum b. is minimum c. remains constant d. becomes zero
31. The frequency of horizontal mass spring system is given by _____
a. $2\pi \sqrt{m/k}$ b. $2\pi \sqrt{k/m}$ c. $1/2\pi \sqrt{m/k}$ d. $1/2\pi \sqrt{k/m}$
32. Angular frequency is basically a characteristics of

- a. circular motion b. Linear motion c. Vibratory motion d. SHM
33. The restoring force in SHM is always
a. directed towards mean position b. directed away from mean position
c. directed at angle of 60° d. directed at angle of 45°
34. If projection N starts its motion from lower extreme and subtends a further angle of 45° , then total phase is
a. 180° b. 270° c. 290° d. 315°
35. When a simple harmonic oscillator is at its mean position, its
a. K.E is maximum b. P.E. is maximum c. K.E. is zero d. K.E. is minimum
36. Shock absorbers of a car is a practical example of
a. SHM b. forced oscillations c. damped oscillations d. resonance
37. If the spring of spring constant K is cut into two pieces then spring constant of each spring is
a. K b. 2K c. K/2 d. none of these
38. Tuning of radio is a best example of
a. mechanical resonance b. electrical resonance c. magnetic resonance d. all of these
39. The to & fro motion of a body about a mean position is called
a. Linear motion b. Oscillatory motion c. Rotatory motion d. none of these
40. The max. K.E of a mass attached to a spring and passing through its mean position is given by
a. $(K.E)_{\max}=kx_0$ b. $(K.E)_{\max}=k x_0^2$ c. $(K.E)_{\max}=(kx_0)^2$ d. $(K.E)_{\max}=(1/2) kx_0^2$
41. The time period of second pendulum is
a. 1 s b. 2 s c. 3 s d. 4 s
42. A generator produces 30 pulses in 5 seconds. Its frequency is
a. 30 Hz b. 150 Hz c. 6 Hz d. 5 Hz
43. The process in which energy is dissipated from oscillation system is known as
a. Damping b. Conduction c. Convection d. Thermionic
44. The vibration of a factory floor caused by the running of heavy machinery is an example of
a. Forced vibration b. Free vibration c. Damped vibration d. None of these
45. Heating is produced in a microwave oven by the phenomena
a. Total Internal Reflection b. Refraction c. Resonance d. Dispersion
46. The total energy of a particle performing SHM at any displacement x is given by
a. $k x^2$ b. $k x^2/2$ c. $k x_0^2$ d. $\frac{1}{2} kx_0^2$
47. A body execute SHM, its P.E., K.E and total energy (T.E) are measured as a function of displacement x. Which of the following statement is true?
a. T.E = 0 when $x=0$ b. K.E is maximum when x is maximum
c. P.E is maximum when $x = 0$ d. K.E is maximum when $x = 0$
48. A body is executing SHM. What fraction of its total energy will be kinetic energy when its displacement from the mean position half of its displacement?
a. 1/2 b. 3/2 c. 3/4 d. 1/4
49. A body is executing SHM motion with amplitude, the total displacement covered in a time equal to its period will be
a. A b. 4A c. 2A d. zero
50. Which of the following is an example of damped oscillation?
a. mass attached to spring b. simple pendulum c. shock absorber of a car d. All of these
51. The frequency of a second's pendulum is
a. 1 Hz b. 05 Hz c. 1.5 Hz d. 2 Hz
52. The cooking and heating of food by microwave oven is an example of
a. SHM b. resonance c. damped oscillation d. none of these
53. If the time period of simple pendulum is 2 s its frequency is
a. 1 Hz b. 2 Hz c. 1.5 Hz d. 0.5 Hz
54. The S.I units of spring constant are
a. m^{-1} b. $N m^{-1}$ c. $N m^{-2}$ d. $N m^2$
55. Time period of simple pendulum only depends upon
a. mass of bob b. length of pendulum c. amplitude of oscillation d. size of bob
56. Length of simple pendulum whose time period is 1 second
a. 0.25 m b. 25 cm c. 100 m d. 0.25 cm
57. The velocity of particle executing SHM is maximum
a. at mean position b. at extreme position c. b/w mean and extreme d. none of these
58. The acceleration of a body performing SHM depends upon its
a. mass b. time period c. amplitude d. displacement
59. If 'f' is the frequency of a body performing SHM, its angular frequency is given by
a. $4\pi f$ b. $2\pi f$ c. $3\pi f$ d. $\pi f/2$
60. If mass of simple pendulum becomes double, then its time period will be
a. double b. half c. four times d. remains same

Assignment 2 Chapter 7 Subject: Physics Class: First year Total Marks: 8

Note: Write short answers

- Q.1 How resonance is produced in tuning radio set?
Q.2 Calculate frequency of simple pendulum.
Q.3 Why soldiers are advised to break their steps while marching on a bridge?
Q.4 Briefly explain electrical application of resonance.