INDIAN SCHOOL NIZWA - WORKSHEET

PHYSICS

CH: 14, 15 OSCILLATIONS

AND WAVES

Name: _____ Date:_____ Class: XI Sec: _A__

1.	Which of the following quantities remains constant in simple harmonic motion? a) Displacement b) Velocity c) Acceleration d) Total Energy
2.	The time period of a simple pendulum depends on which of the following factors? a) Mass of the pendulum bob b) Amplitude of the oscillation c) Length of the pendulum d) angle of oscillation
3.	If a simple harmonic oscillator has got a displacement of 0.02 m and acceleration equal to 2.0 m/s^2 at any time, the angular frequency of the oscillator is equal to a) 10 rad/s b) 1 rad/s c) 100 rad/s d) 1 rad/s
4.	The restoring force in simple harmonic motion is directly proportional to: a) Displacement b) Velocity c) Acceleration d) Time period
5.	What is the change in the phase if a wave is reflected from a rigid boundary? (a) 3π (b) 0 (c) π (d) 2π

1.	What are the two basic characteristics of an oscillating system?
2.	What is meant by SHM?
3.	What is meant by displacement of a particle executing SHM?
4.	Define force constant and give its dimensional formula.
5.	State force law of simple harmonic motion.
6.	Give the general expression for displacement of a particle undergoing SHM.
7.	A simple harmonic motion of acceleration a and displacement x is represented by , $a + 4\pi^2 x = 0$. What is the time period of SHM?
8.	Write the values of oscillation – amplitude and frequency from the equation $y = A\sin\omega t$ of SHM.
9.	What provides the restoring force for simple harmonic oscillations in the following cases: (i) simple pendulum (ii) spring (iii) column of Hg in a U tube?
10.	What is meant by phase of an oscillating particle?
11.	What is initial phase or epoch? Two simple pendulums of same length are crossing at their mean positions. What is the phase difference between them?
12.	Velocity and displacement of a body executing SHM are out of phase by $\pi/2$. How?
13.	What is the ratio between the potential energy and the total energy of a particle executing SHM, when its displacement is half of its amplitude?
14.	A simple pendulum is inside a space craft. What should be its time period of vibration?
15.	Frequency is the most fundamental property of a wave .why?
16.	What is the phase difference between two nearest crests?
17.	A harmonic wave travelling in a medium has a period T and wavelength λ. How far dos the wave travels in time T?
18.	When are stationary waves produced?
19.	Fundamental frequency of oscillation of a close pipe is 400hz. What will be the fundamental frequency of oscillation of an organ pipe of same length?
20.	In an organ pipe, third harmonic is 450Hz. What is the frequency of fifth harmonic?
21.	An organ pipe produces a fundamental frequency of 128hz. When blown forcefully, it produces first overtone of 384Hz. Is the pipe open or close?
22.	A tuning fork is in resonance with a closed pipe. But the same tuning fork cannot be in resonance with an open pipe of same length. Why?
23.	How does the frequency of a tuning fork change, when the temperature is increased?
24.	Two sources produce 12 beats in 4 seconds. By how much do their frequencies differ?
25.	Why does the pitch of a note produced by a wooden open end organ pipe become sharper when the temperature increases?