

SCIENCE HOLIDAY HOMEWORK

CLASS – IX

PHYSICS

Q1. Write the mentioned Practicals in your Physics Practical File.

- To verify the laws of reflection of sound.
- To determine the velocity of a pulse propagated through a stretched spring / slinky.

Q2. Make an innovative model (working/non-working) from your syllabus :-

Suggested topics: Alternative sources of energy, Friction, Conservation of Momentum, Gravitation, Conversion of energy etc.

Q3. Attempt the worksheet in A4 sized ruled sheets :-

- Is sound a mechanical wave? How will you demonstrate this? Draw a neat diagram to establish the same.
- State two conditions required to hear an echo?
- Fill in the blanks with suitable words.
 - An echo is simply a _____ sound.
 - Pitch of sound depends on _____.
 - Loudness of sound depends on _____.
 - Quality of sound depends on _____
 - Full form of SONAR _____.
- Explain why flash of lightning is seen first and the sound of thunder is heard a little later?
- A sound wave has a frequency of 2 KHz and a wavelength of 45 cm. it takes 4s to travel. Find the distance it travels.
- Many animals move the ear flap(or pinna) in order to focus their hearing in a certain direction. Can humans do so?
- How can a bat tell the size of a flying insect?
- Is there any link between the intelligence of dolphins and their ability to 'hear' ultrasounds.
- An approaching train can be felt by applying ears to rails but through air its approach cannot be felt easily. Why?
- When we nibble at a rusk, we hear a noise that is simply deafening. But for some reason, our neighbour makes hardly any noise though he is doing the same. Why?
- If the distance from the sound source triples, the sound intensity will be
 - 3
 - 1/3
 - 9
 - 1/9
 - by how much must the distance from the point source be increased to reduce the sound intensity by half?
- Medical ultrasound uses a frequency of around 20 MHz to diagnose human conditions and ailments.
 - If the speed of sound in tissue is 1500 m/s, what is the smallest detectable object?

- b) If the penetration depth is about 200 wavelengths, how deep can this instrument penetrate?
13. a) After a snowfall, why does it seem particularly quiet?
- (b) why do empty rooms sound hollow?
14. You lift a box weighing 200 N from the floor to a shelf 1.5 m above.
- a) What is the maximum work done by the force you exert on the box?
- b) When would the work be greater than this maximum?
15. Soni says that the acceleration in an object could be zero even when several forces are acting on it. Do you agree with her. Why?
16. Can there be displacement of an object in the absence of any force acting on it? Justify.
17. What is the work done by the force of gravity on a satellite moving around the Earth? Justify your answer.
18. 300 J of work is done in sliding a 2 kg block up an inclined plane of height 10 m. What is the work done against the force of friction?
19. A uniform chain of mass 'm' and length 'l' is lying on a table with (1/4) of its length hanging freely from the edge. Find the amount of work required to be done in dragging the chain on the table completely?
20. A boy is moving on a straight road against a frictional force of 5 N. After travelling a distance of 1.5 km, he forgot the correct path at a round about of radius 100 m. However, he moves on the circular path for one and half cycle and then he moves forward upto 2.0 km. Calculate the work done by him.
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