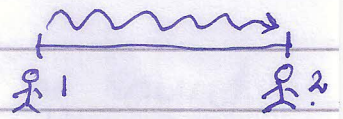
ANSWERS TERM II

1. Two children are at opposite ends of an aluminium rod. One strikes the end of the rod with a stone. Find the ratio of times taken by the sound waves in air and in aluminium to reach the second child.



Let l be the length of the rod. Let V_{al} and V_{air} be the speed of sound in aluminium rod and air respectively.

Time taken by the sound to travel through aluminium rod $t_{al} = \frac{l}{V_{al}}$

Time taken by the sound to travel through air $t_{air} = \frac{l}{V_{air}}$

$$\frac{t_{air}}{t_{al}} = \frac{\cancel{l}}{V_{air}} \times \frac{V_{al}}{\cancel{l}} = \frac{V_{al}}{V_{air}}$$

2. Sound of explosions taking place on other planets are not heard by a person on the earth. Why?

A. Sound needs a material medium for its propagation from one place to another place. But between two planets, there is vaccum through which sound cannot travel. Hence we cannot hear the sound of explosions taking place on other planets.

3. Two astronauts on the surface of moon cannot talk to each other. Why?

There is no atmosphere on the surface of moon. So there is no medium for propagation of sound. So sound cannot travel from one person to another.

4. When a sound is reflected from a distant

object, an echo is produced. Let the distance of the reflecting surface and the source of sound production remains the same. Do you hear echo on a hotter day?

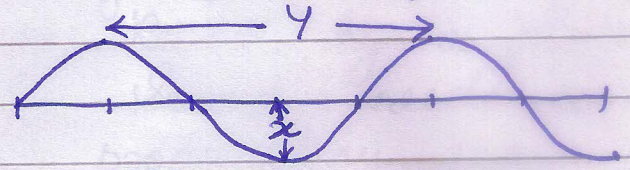
The time required to hear the echo $t = \frac{2d}{v}$, where d is the separation between source of sound and obtacle and v is the speed.

On a hotter day speed of sound increases. Hence the time after which echo is heard decreases. If the time taken by the reflected sound is less than 0.1s after the production of original sound, then echo is not heard. But if time is greater than 0.1 s, echo will be heard.

Q. A sound wave travelling in a medium is represented as shown.

(i) which letter represents amplitude of sound wave

(ii) which letter represents the wavelength?



A. (i) x – represents amplitude.

Y – represents wavelength.

BEST OF LUCK!