***BASIC SCIENCE FOR JS3***

***SOUND ENERGY***

Sound is a form of wave motion which is conveyed through a vibrating medium

to it's environment.

As an object vibrates, it disturbs the surrounding air causing waves to travel outwards in all directions. Sound travels in media like solid, liquid and gas. It can be produced by plucking guitar strings, whistle, talking, drums etc. This shows that vibrating objects produce sounds. Vibration is a rapid to and fro motion of an object. For example, the human body produces sound due to vibrations in the vocal cords. Note that there are sounds that can't easily be heard by man but can be heard by animals like snakes, bats etc. These sounds are called infrasonic sounds and have frequency of below 20 Hertz. But some sounds are within human hearing range of frequencies between 4000 to 20000Hertz.These range of sounds are called ultrasonic sounds.

Uses of ultrasonic sounds

1.detecting objects and measuring distancing

2.destroying bacteria in water

3.used in medicine

4.testing of product and structures of metals

5.detecting invisible flaws in metals

Sources of sounds

1. Vibrating tuning work for you and I will

2. Musical instruments-These are as follows

a. wind instruments eg flute, trumpets, pipe organ, clarinet, saxophones etc

b.stringed instrument eg guitar,sonometer,piano,violin

Percussion instrument eg talking drums,bells,gonge,xylophone etc.

***Assignment:***

Explain three factors that affect the speed of sound

***Factors affecting the speed of sound***

***1.Temperature***,-The speed of sound is directly proportional to the square root of the temperature.So the higher the temperature,the greater the speed of sound.This is why sound travels faster on sunny days than on colder days.

***2.Wind***-The speed of sound increases in the same direction as the wind blows and decreases if the sound travels in the opposite direction of the wind.

***3.Density of the earth medium***-The speed of sound is inversely proportional to the square root of the density D.Density means mass per

unit volume of a substance.So the higher the density of a medium,the lesser the speed of sound.

***Echo***-This is a reflection of sound. When sound wave strikes a smooth surface,the sound will be sent back,so that it is being heard twice.

***Uses of echo***

1.It is used for determination of speed of sound

2.It determines distance of objects

3.It is used in oil and gas exploration-

4.It is used to detect flaws in metals pipes

5.It is used in medical ultrasound

***The human ear***

This sense organ responds to stimulus of sound. It is made up of outer ear, middle ear and inner ear

***The outer ear***-The pinna collects sound waves and directs them to the ear canal. This passes the vibration to the eardrum, which increases the vibration and sends it to the middle ear. Here is a small air -filled chamber. It is made up of three tiny soft bones called ossicles, held in place by muscles. These bones in the ear are called hammer, Incus and stapes. These bones vibrate and send the sound into the inner ear. The inner ear contains a complex of bony passageways filled with fluids called perilymph and endolymph. The vibrations gets to the cochlea and the semi-circular canals .The sound is then conveyed by nerves to the brain for interpretation.

***Assignment***

1.Explain echo

2.Explain factors that affect speed of sound

3.which part of the ear maintains balance

***Submit assignment at the school’s security post***