K / SRI RAHULA COLLEGE

KATUGASTOTA

Subject:- SCIENCE

Study pack 1 – waves and their applications Unit 04

For English medium students in Grade 11

1. What a wave is?
2. What are 2 main types of waves?
3. There are 2 mechanical waves that can be demonstrate with a slinky
   Explain them briefly through relevant diagrams.
4. Label the sinusoidal wave with the physical quantities which is drown to a wave motion
   Explain the following terms.
   a. Amplitude of a wave
   b. Wave length of a wave
   c. Period
   d. Frequency
   e. Speed
5. Explain what is an electromagnetic wave?
   a. What are the characteristics of electromagnetic waves?
   b. What is electromagnetic spectrum?
   c. Fill in the following table with the details related to electromagnetic spectrum.

WAVES	TYPICAL WAVE LENGTH	MAIN SOURCE	DETECTION	SOME USES	CAUTION
Gamma rays			Geiger-Müller counters		Extremely dangerous
X- rays					
Ultraviolet					
Visible light	10^{-7} m				-

Infra-red					-
Microwave					-
Radio wave				Radio and TV broadcast	-

b.What are the characteristics of sound?

c. what variations can be seen when observe them through a oscilloscope?

Explain with diagrams.

d. what are Infar sounds,ultrasounds?

f.What are the uses of ultra sound?

g. Categories the main 3 types of musical instruments.

7. There is a relationship between speed of sound ,frequency and wave length

Use the relavent equation for it and solve the following problems.

a. A micro wave source has a frequency of 24×10^{9}Hz What is the wavelength of waves emitted by source?
b. A radar pulse is refleced by an air craft and is receiving back after 4×10^{-5} s. What is the distance of the aircraft from the radar station?
(speed of light = $3\times10^{8}ms^{-1}$)
c. Echo sounding equipment on a ship receives sound pulses reflected from the sea bed 0.02s after they were sent out. If the speed of sound in sea water is $1500ms^{-1}$,what is the depth of water under the ship?

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