

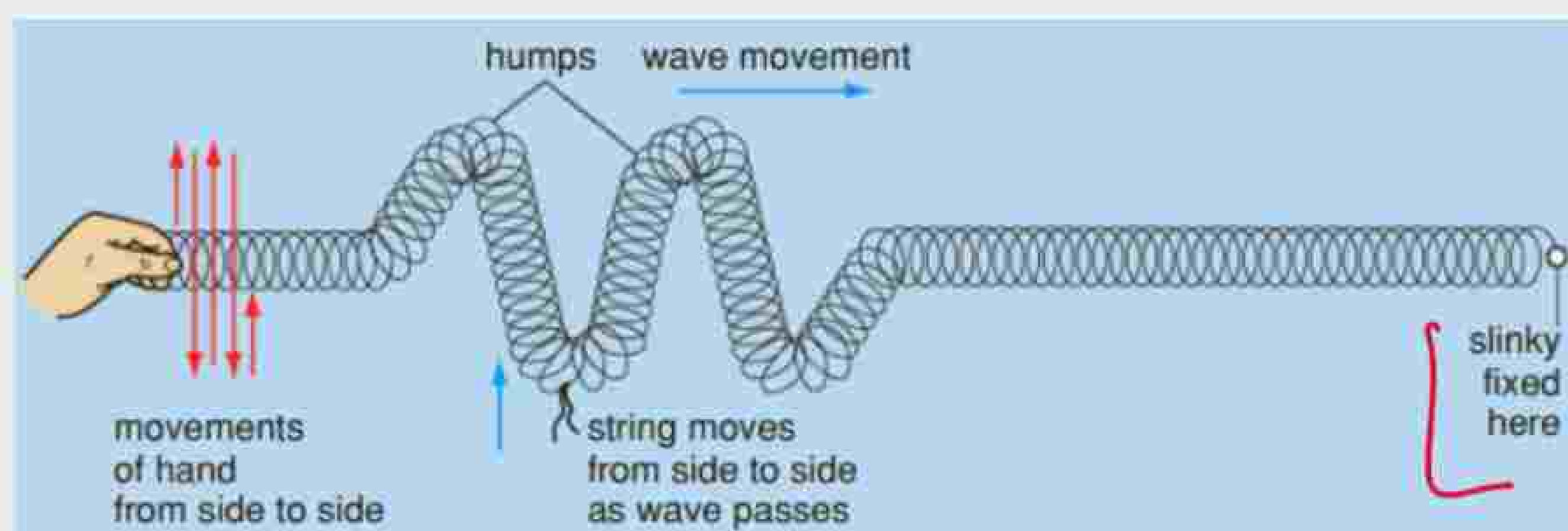
Waves :-

↳ they are vibrations that carry energy.

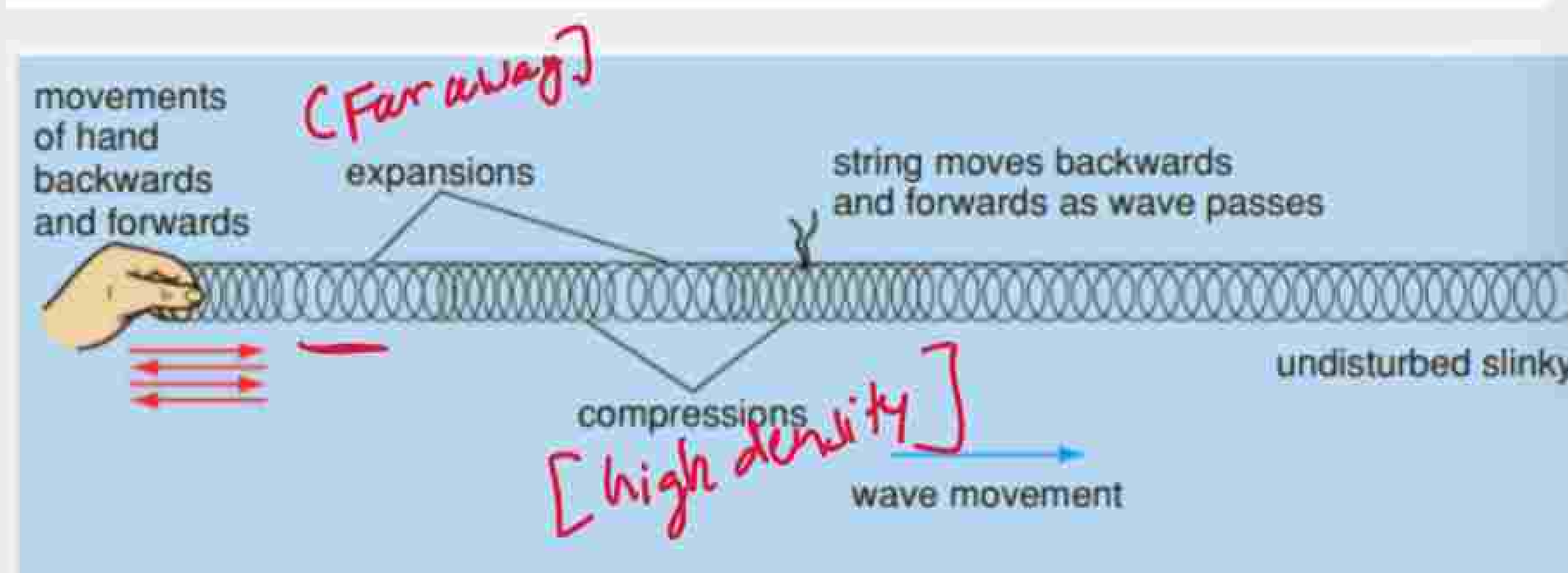
Types :-

① Transverse

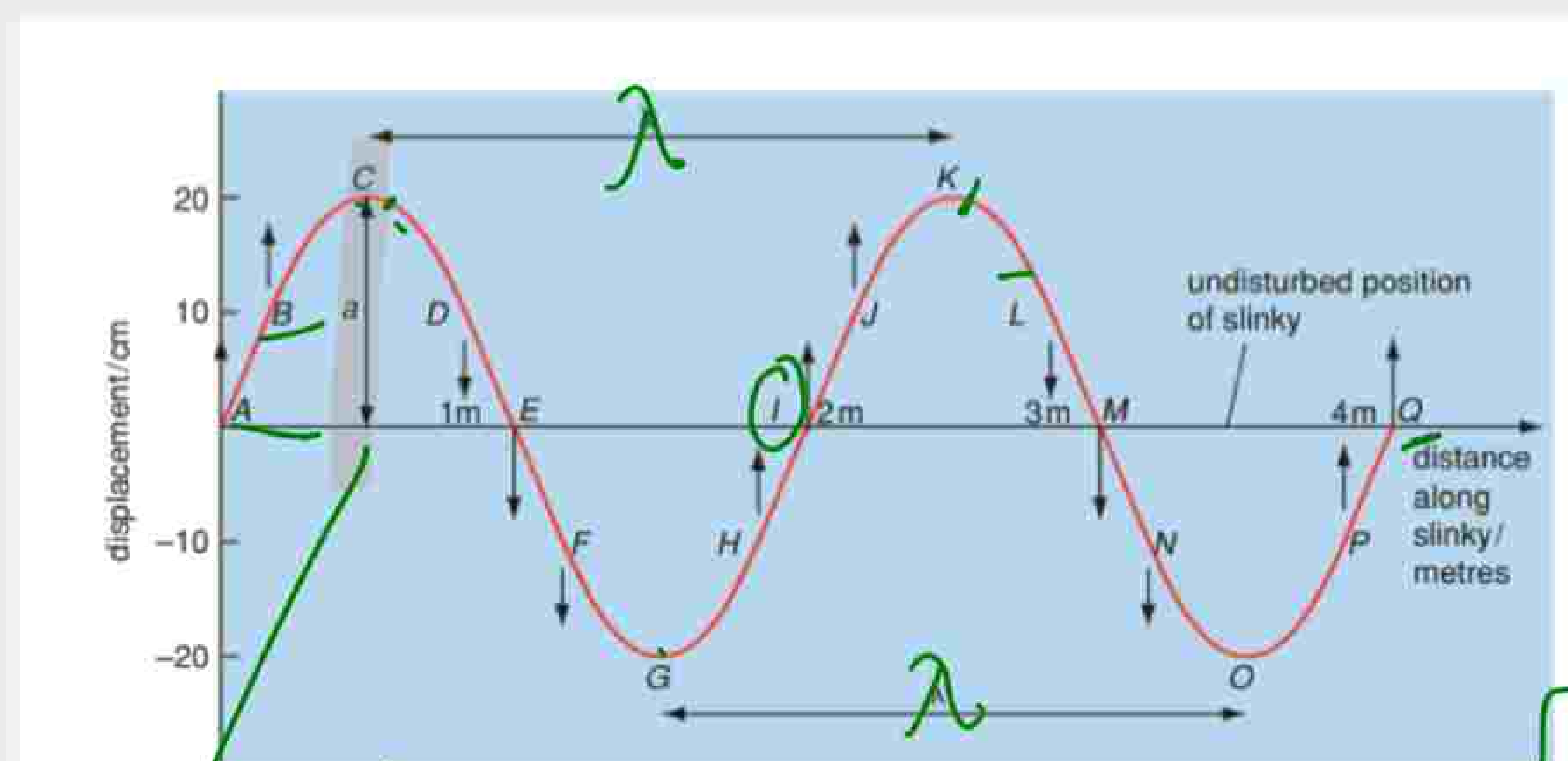
② Longitudinal.



→ Transverse



→ Longitudinal



① wavelength
symbol (λ)
↳ lambda

⇒ distance b/w 2 humps. (adjacent)

⇒ shortest distance b/w 2 points that are in phase.
same vibrate

② Amplitude : greatest displacement of the wave from the undisturbed position. (a/A)

③ Frequency :- number of complete waves produced per second. [A to I, I to Q] (f)

④ Time Period :- time taken to produce one complete wave.

Relation b/w Frequency and Time period:-

$$F = \frac{1}{\text{Time Period}}$$

units

(i) Wavelength $\longrightarrow$ m

(ii) Frequency $\longrightarrow$ Hz

(iii) Time period $\longrightarrow$ seconds.

wave velocity:- 'v' $\xrightarrow{\text{symbol.}}$ [distance travelled by a wave in 1 sec.]

$$v = \frac{\text{displ}}{\text{Time}} = \frac{\text{m}}{\text{sec}} = \frac{\text{m/sec}}{\text{per} \rightarrow \text{divide}}$$

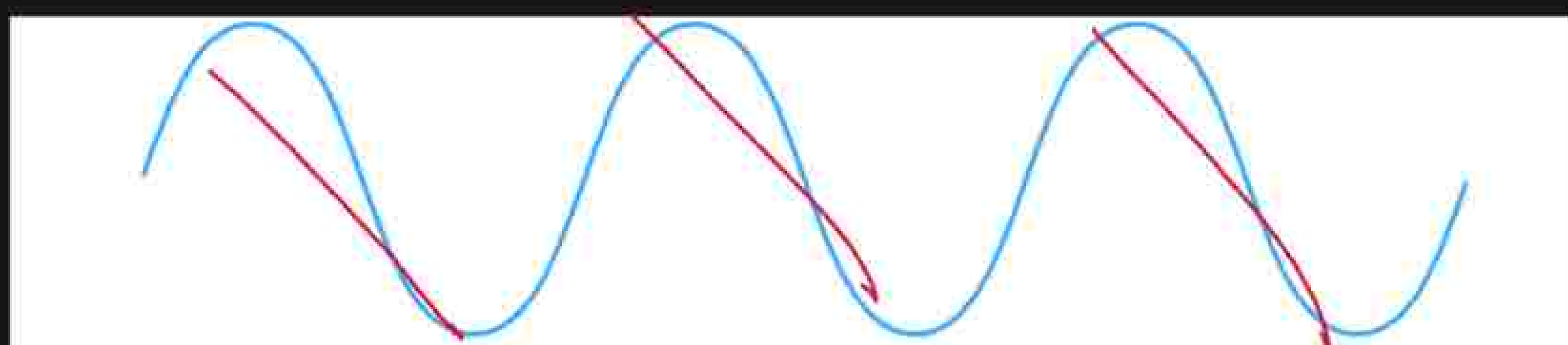
$$\text{velocity} = \underline{\text{m sec}^{-1}} \text{ unit}$$

IMP

[velocity = Frequency $\times$ wavelength]

$$v = f \times \lambda$$

Q



$$v = 1.2 \text{ m/s}$$

$\rightarrow$ no. of waves in 1 sec

$\therefore$ Find Frequency $\Rightarrow 3 \text{ Hz}$

$\lambda = 0.4 \text{ m}$ Find v. =

Numericals :-

waves, calculate their wavelength.

9 Sound travels at a speed of 330 m/s in air.

a) A sound wave has a frequency of 660 Hz. What is its wavelength?

b) A sound wave has a wavelength of 0.2 m. What is its frequency?

$$\Rightarrow v = f \times \lambda$$

$$\underline{\lambda = 0.5 \text{ m}}$$



Q 2 waves

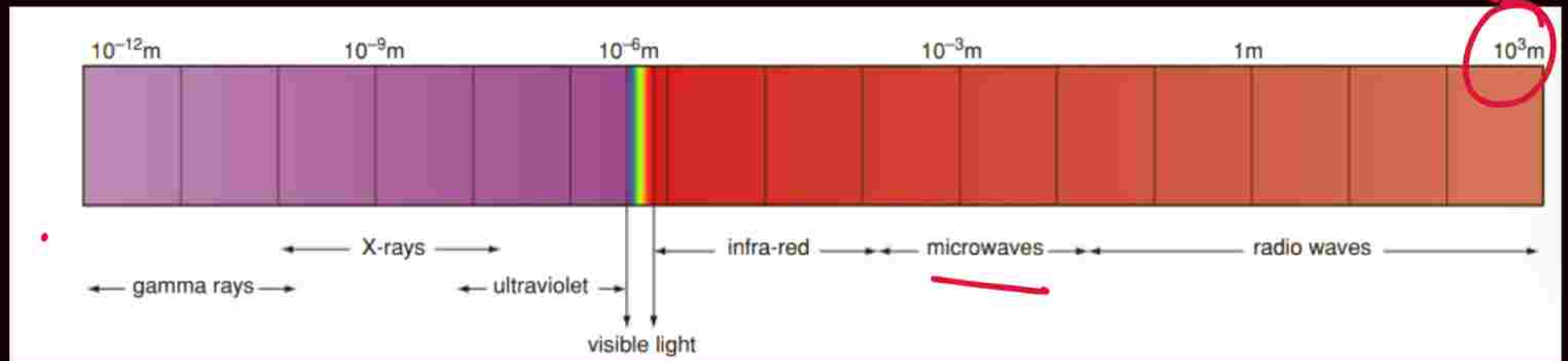
A $\rightarrow$ 0.1 s B $\rightarrow$ 0.25 s

Which wave has greater frequency?

$\Rightarrow$ No λ No v

$$\underline{v = f \lambda} \quad \times$$

EM Waves (spectra)



Order of wavelengths :-

Radiowaves > microwaves > Infra-red > visible > ultraviolet > X-rays > gamma rays.

Order of frequency :- γ - greek letter.

γ -rays > X-Ray > UV > visible > IR > micro > radio.

Energy of a wave is directly proportional to frequency.

Directly Proportional :- If one quantity increases other automatically increases.

Most Energetic :- γ - Rays

Homework :-

- (i) Kindly learn all definitions.
- (ii) Formula's of Frequency, wavelength and wave velocity.