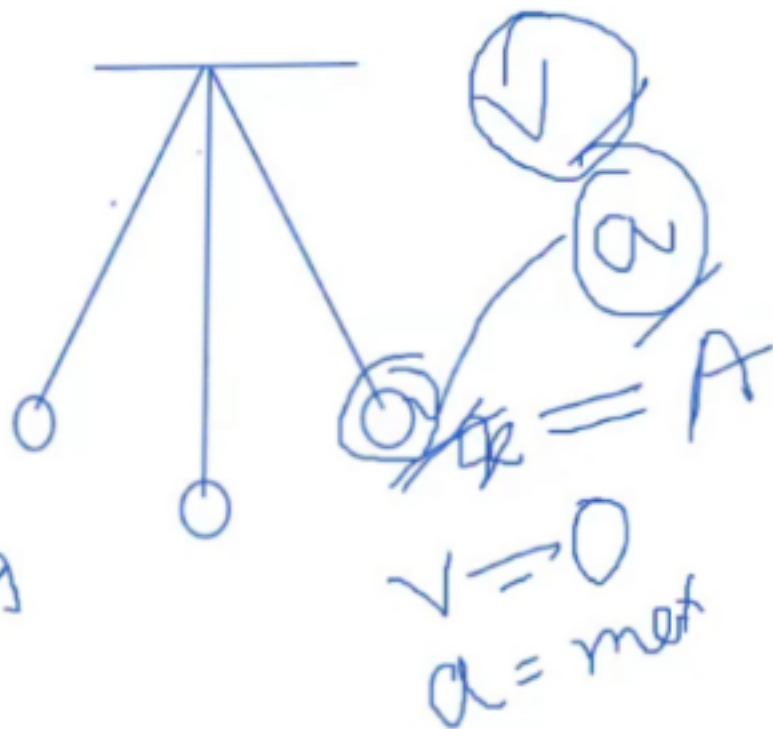


$$\begin{aligned}
 V &= \omega \sqrt{A^2 - q^2} \\
 &= \omega \sqrt{A^2 - A^2} \\
 &= \omega \times 0 \\
 &= 0
 \end{aligned}$$

$$\begin{aligned}
 P &= \omega q \\
 &= -\omega^2 A
 \end{aligned}$$



(B)

$$\sqrt{A^2 - q^2}$$

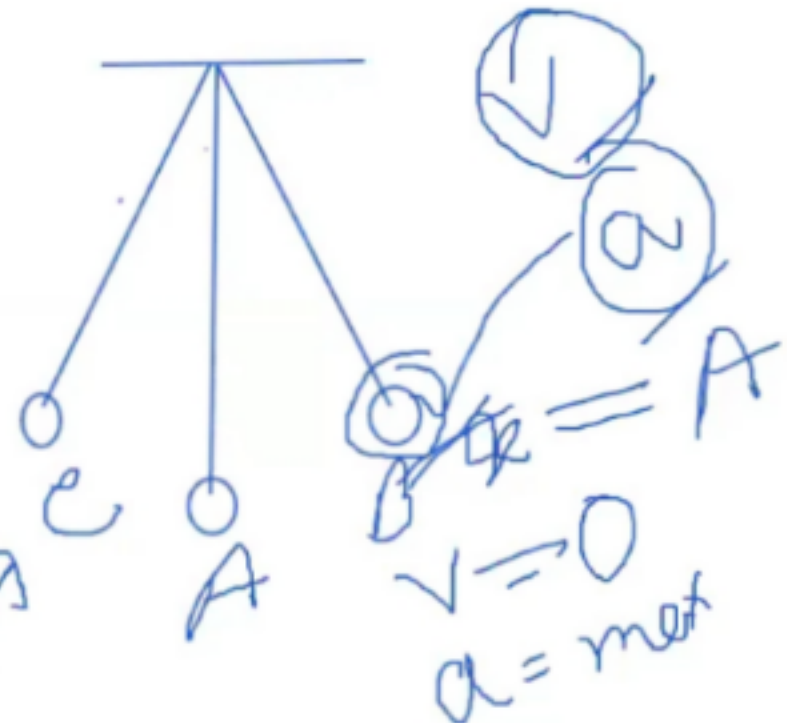
$$v = \omega \sqrt{A^2 - q^2}$$

$$= \omega \sqrt{A^2 - A^2}$$

$$= \omega \times 0$$

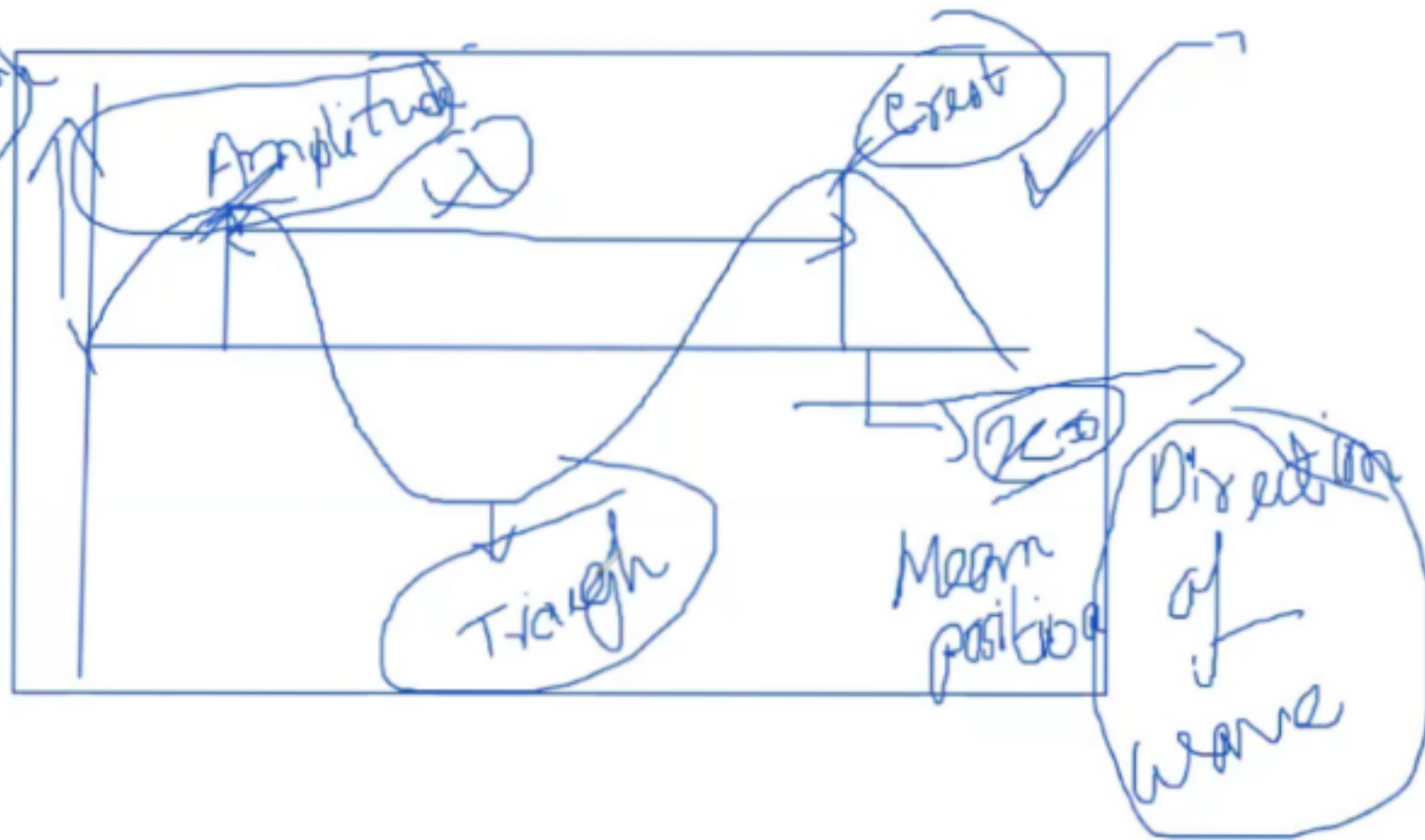
$$v_{\min} = 0$$

$$p = \frac{h}{\lambda} = \frac{h}{\omega \lambda}$$



5

Vib rate



the 19th century led to the discovery that light waves were in fact electromagnetic radiation.

Different theories of light:

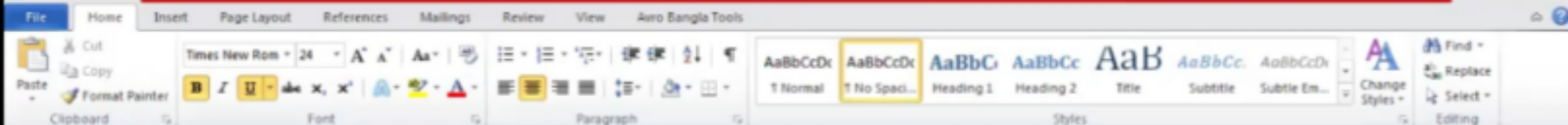
To explain the nature of light, till now four theories have been discovered. The four theories that have been put forward by the Scientist till now as follows:

- 1) Corpuscular or Emission theory
- 2) Wave theory
- 3) Electromagnetic theory
- 4) Quantum theory

Corpuscular Theory or Emission Theory: In 1672 Sir Issac Newton put forward this theory. According to this theory, *luminous body continuously emits tiny weightless corpuscles or particles in all directions with a tremendous velocity and when these particles fall on eye they produce the sensation of vision.* The *rectilinear propagation, reflection and refraction* of light can be explained. But *interference, diffraction, polarization, dispersion, photoelectric effect* etc. cannot be explained. According to this theory, the velocity of light in denser medium is more than that of rarer medium.

Wave Theory: According to this theory, *light travels through a hypothetical medium called* that of rarer medium.

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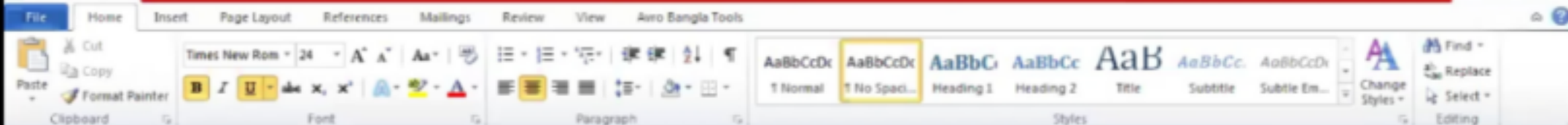
- 3) Electromagnetic theory
- 4) Quantum theory

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Wave Theory: According to this theory, *light travels through a hypothetical medium called ether in the form of wave from one place to another and when it reaches to our eye the sensation of vision is produced.* Ether is a continuous medium whose elasticity is very high but density is very low. In ether medium the *light wave travels with a velocity of $3 \times 10^8 \text{ ms}^{-1}$.* *Reflection, refraction, interference and diffraction* of light can be explained with this theory but it cannot explain *polarization and photoelectric effect.*

Electromagnetic Theory: James Clerk Maxwell introduced the electromagnetic theory of light. According to this theory, *when there is a changing electric field it produces a moving magnetic and*

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3) Electromagnetic theory

4) Quantum theory

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Electromagnetic Theory: James Clerk Maxwell introduced the electromagnetic theory of light. According to this theory, *when there is a rapid periodic change in the moving magnetic and*

Young
Fresnel