VIDYA BHAVAN, BALIKA VIDYAPEETH

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SUBJECT:- PHYSICS CLASS:- IXTH DATE:-13/04/XXI

SUBJECT TEACHER:- MR. NEEL NIRANJAN

CHAPTER 1. (MOTION)(BASED ON NCERT PATTERN)

- **Average velocity**: It is given by the arithmetic mean of initial velocity and final velocity for a given period of time.

$$\Rightarrow \quad s = \frac{uv-u^2}{a} + \frac{a\left(v^2+u^2-2uv\right)}{2a^2}\left[\text{Using}, (a-b)^2 = a^2+b^2-2ab\right]$$

$$\Rightarrow \quad s = \frac{uv-u^2}{a} + \frac{v^2+u^2-2uv}{2a}$$

$$\Rightarrow \quad s = \frac{2uv-2u^2+v^2+u^2-2uv}{2a}$$

$$\Rightarrow \quad 2as = v^2-u^2$$

$$\text{Or} \quad \boxed{v^2 = u^2+2as}$$

Acceleration (a):

- The rate of change of velocity is termed as acceleration.
- It is represented as:

$$\text{Acceleration} = \frac{\text{Final velocity} - \text{Initial velocity}}{\text{Time}}$$

- Its SI unit is metre/seccond^2 (m/s^2).
- It is a vector quantity.
- The acceleration is taken to be positive if it is in the direction of velocity and negative when it is opposite to the direction of velocity.
- Negative acceleration is also named as retardation or deacceleration.