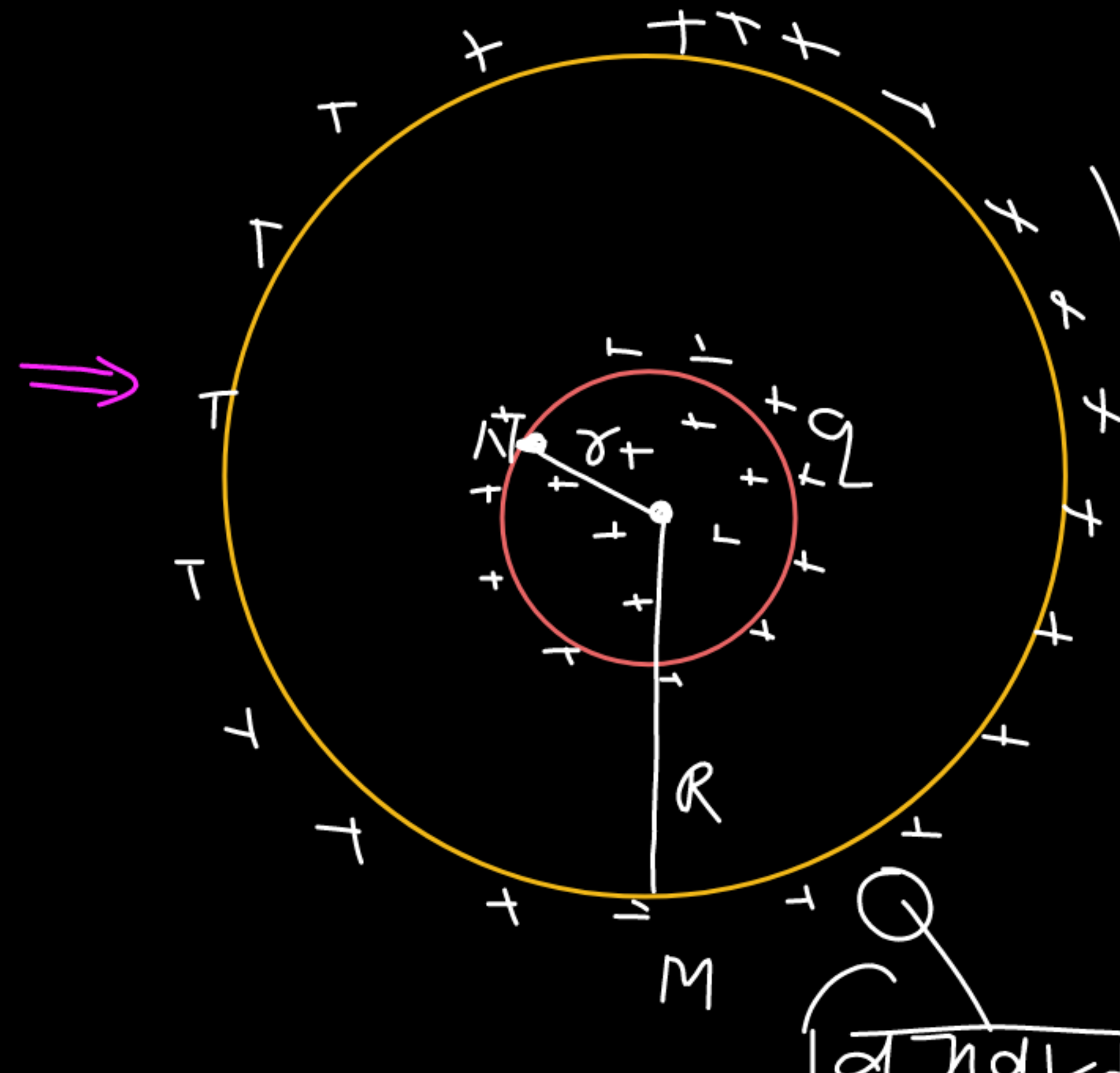
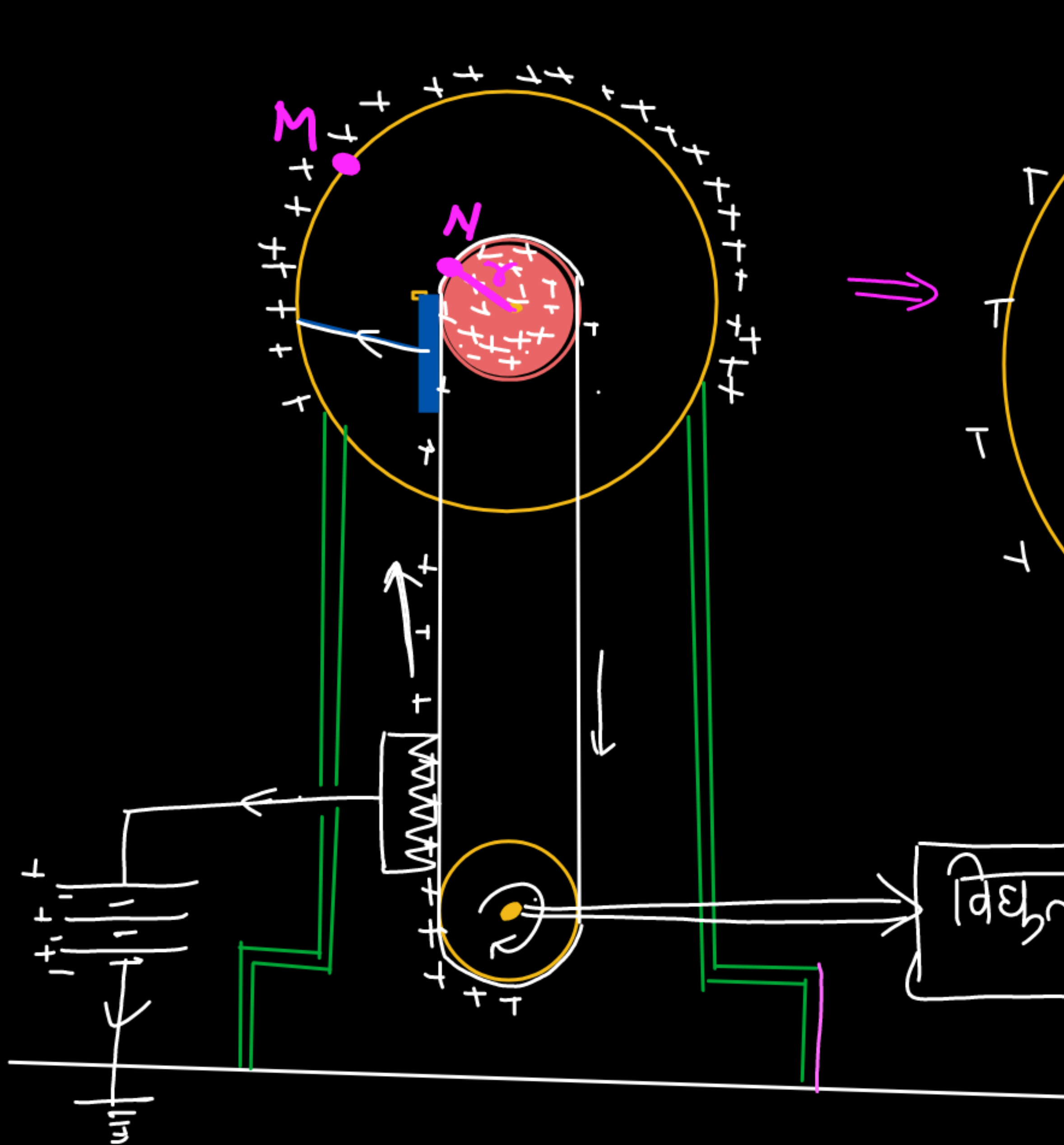


वान-डि ग्राफ जनित

Van-de-graaff Generator

— High voltage produce  
उच्च वोल्ट उत्पन्न करता है (5M)



$$V_M = \frac{kq}{R} + \frac{kq}{R}$$

$$V_N = \frac{kq}{r} + \frac{kq}{R}$$

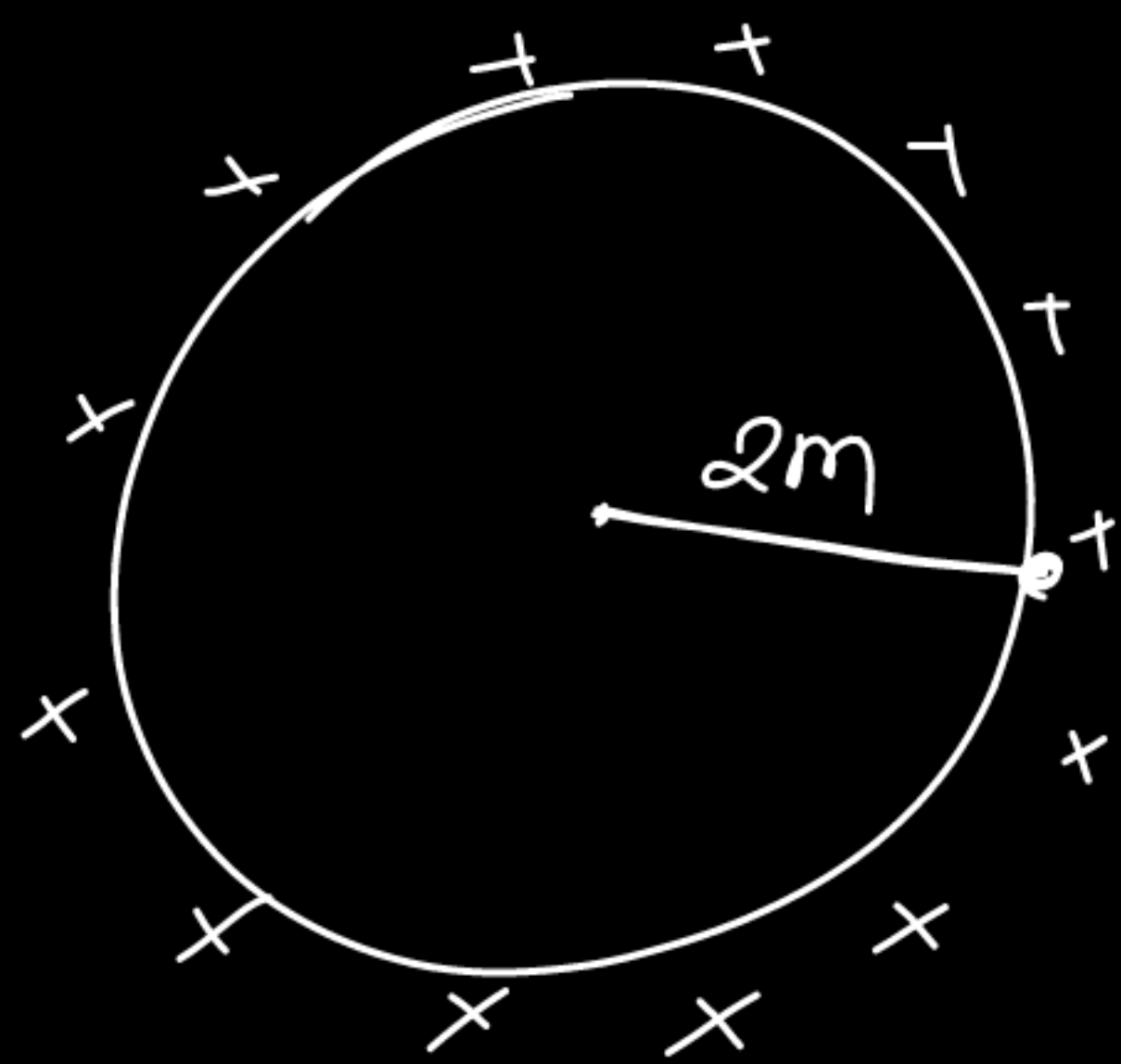
विद्युत विभव =  $V_N - V_M$

$$V = \frac{kq}{r} - \frac{kq}{R}$$

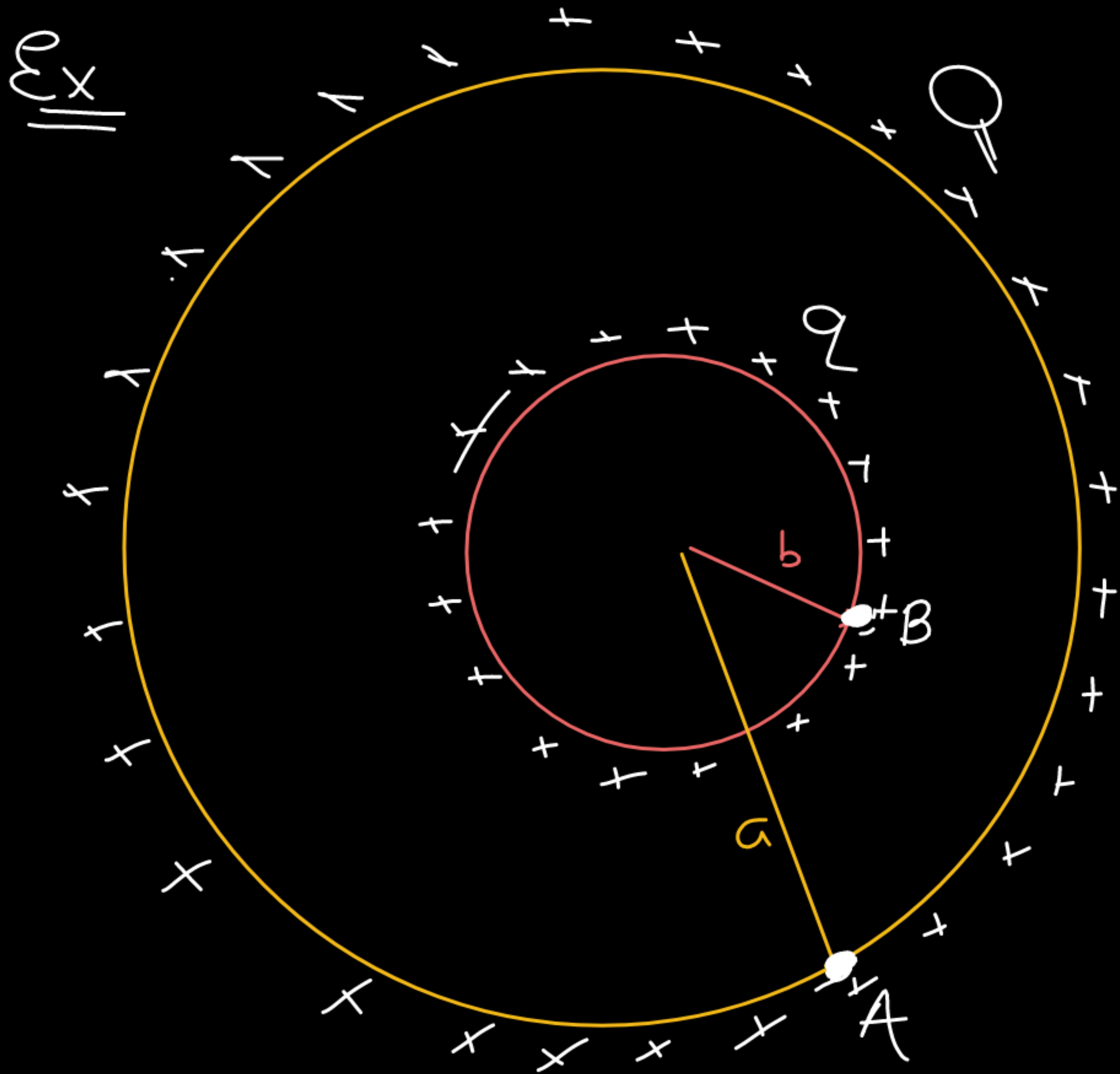
$$= \left( \frac{kq}{r} + \frac{kq}{R} \right) - \left( \frac{kq}{R} + \frac{kq}{R} \right) = \frac{kq}{r} - \frac{kq}{R}$$

$$V = kq \left[ \frac{1}{r} - \frac{1}{R} \right]$$

Example  $\rightarrow 2\mu\text{C}$



$$V_s = \frac{kq}{R} = \frac{9 \times 10^9 \times 2 \times 10^{-6}}{2}$$
$$= 9 \times 10^3$$
$$= \underline{9000\text{V}}$$



$$V_A = ?$$

$$V_B = ?$$

$$V_A = \frac{kQ}{a} + \frac{kQ}{a}$$

$$V_B = \frac{kQ}{b} + \frac{kQ}{a}$$

# Revision:

$$U = \frac{1}{2} C V^2$$
$$= \frac{Q^2}{2C}$$
$$= \frac{QV}{2}$$

$$C = \frac{Q}{V}$$

धारिता =  $\frac{\text{आवेश}}{\text{विभवांतर}}$

$$C = \frac{A \epsilon_0}{d}$$

$$V = \frac{W}{Q}$$

$$V = \frac{kQ}{R}$$

$$\rightarrow E = \frac{\sigma}{2\epsilon_0}$$

$$\rightarrow U = \frac{kQ_1 Q_2}{r}$$

$$\rightarrow F = \frac{kQ_1 Q_2}{r^2}$$

$$\rightarrow \frac{\Phi}{T} = \frac{Q}{\epsilon_0}$$

$$\rightarrow \Phi = \vec{E} \cdot \vec{A}$$

$$\rightarrow u = \frac{1}{2} \epsilon_0 E^2 = \frac{\sigma^2}{2\epsilon_0}$$

$$\rightarrow E = \frac{1}{2\pi\epsilon_0 r} = \frac{2kQ}{r}$$

$$\rightarrow \vec{P} = Q \vec{r}$$

$$\rightarrow \vec{\tau} = \vec{P} \times \vec{E}$$

$$\rightarrow U = -\vec{P} \cdot \vec{E}$$

$$\rightarrow E = \frac{F}{q}$$

$$\rightarrow E = \frac{kQ}{r^2}$$

$$1) F = \frac{kQ_1Q_2}{r^2}$$

$$2) U = \frac{kQ_1Q_2}{r} = \frac{1}{2}cv^2 = \frac{QV}{2} = \frac{Q^2}{2\epsilon}$$

$$3) E = \frac{F}{q} = \frac{kQ}{r^2} = \frac{1}{2\pi\epsilon_0 r} = \frac{\sigma}{2\epsilon} = -\frac{dU}{dr} = \frac{Pk}{r^3} = \frac{2Pk}{r^3}$$

$$4) v = \frac{W}{q} = \frac{kQ}{r} = \frac{Pk}{r^2} \left( 0 \right) = \frac{Pk}{r^2} \sqrt{3\cos^2\alpha + 1}$$

$$5) C = \frac{Q}{V} = \frac{A\epsilon_0}{d}$$