

⇒ charge:

Charge

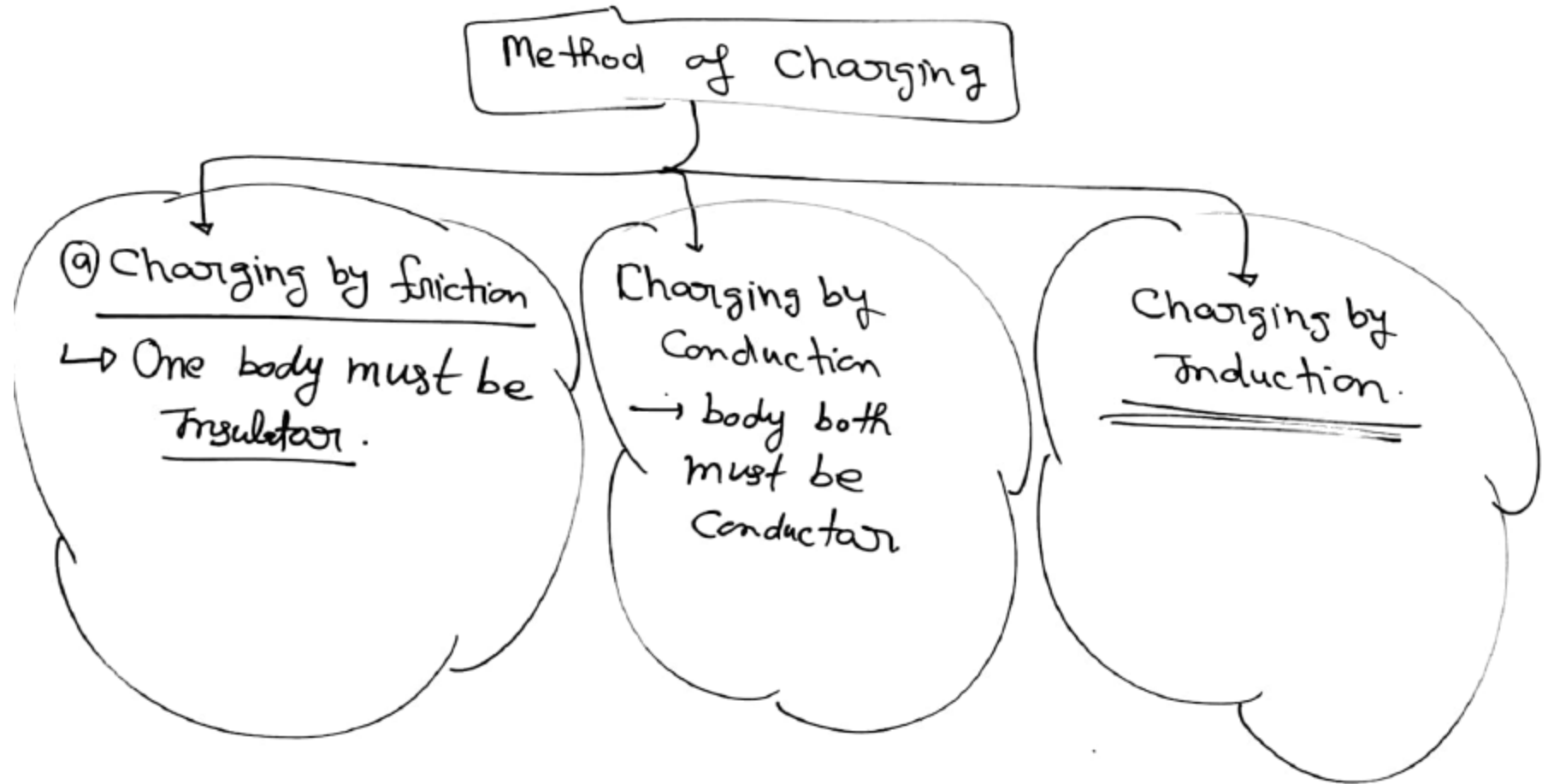
20C	-10C
20	-20
30	-30

Net charge = 10C

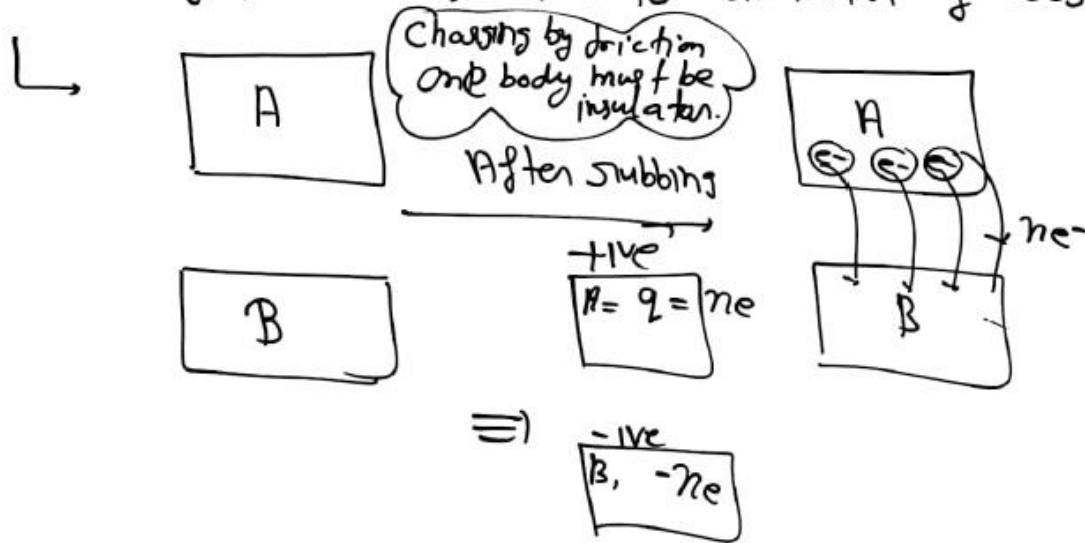
mass

- ① ↳ Scalar quantity
- ② ↳ SI Unit - C, (or) Amp-sec
- ③ ↳ derived quantity
- ④ ↳ Charge is quantized. [ $q = ne$ ]
- ⑤ ↳ Charge of a isolated system is conserved.
- ⑥ ↳ Charge is invariant. [does not depends on speed of charge particle.]

- ↳ Scalar quantity.
- ↳ Kg.
- ↳ fundamental quantity.
- ↳ No term for quantization of mass.
- ↳ Mass converted into energy  
 $E = mc^2$
- ↳  $m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$ 
  - $v$  = speed of particle
  - $c$  = speed of light.



- ① Charging by friction:- When two body rub each other, due to frictional work both body heated [Temperature of both body ↑] . due to Thermal Energy electron are ejected from one body to other, due to dissimilar of work function or "Ionisation Energy"



[Let  $\phi_A < \phi_B$   
Work function]

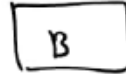
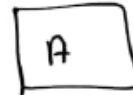
I.E

Energy  $E = \frac{3}{2} kT$

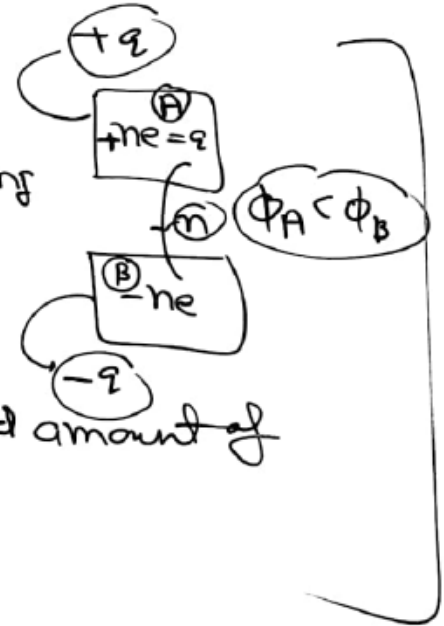
$k \rightarrow$  Boltzmann constant  
 $T =$  Kelvin  
 $\angle$  Temperature in Kelvin

Charging by friction :-

① In charging by friction  
Charge on both body is same  
in magnitude & opposite in sign [Nature]



after rubbing



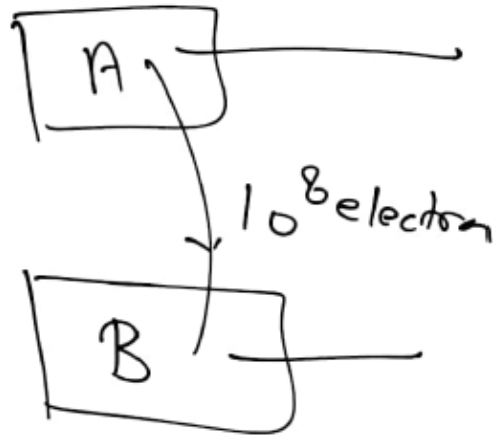
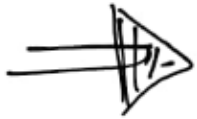
② Mass of +ve charge body ↓ & eq of same ~~and~~ amount of  
mass increases of -ve charge body

③  $q = ne$

Extra part: Work function ( $\phi_0$ ) :- Minimum Energy required to remove  
a electron from metal surface

Q19

two body A & B rubbed each other, after rubbing  $10^8$  electron transfer from A to B. find charge on A & B.



$$q = ne = 10^8 \times 1.6 \times 10^{-19} \text{ C} \\ = \underline{\underline{1.6 \times 10^{-11} \text{ C}}}$$

$$q = -ne = \underline{\underline{-1.6 \times 10^{-11} \text{ C}}}$$

⇒ Charging by induction:

⊖ always flow from Low potential to high potential ↳ Step-1)

⊕ always flow from High potential to low potential

⊕ — high potential

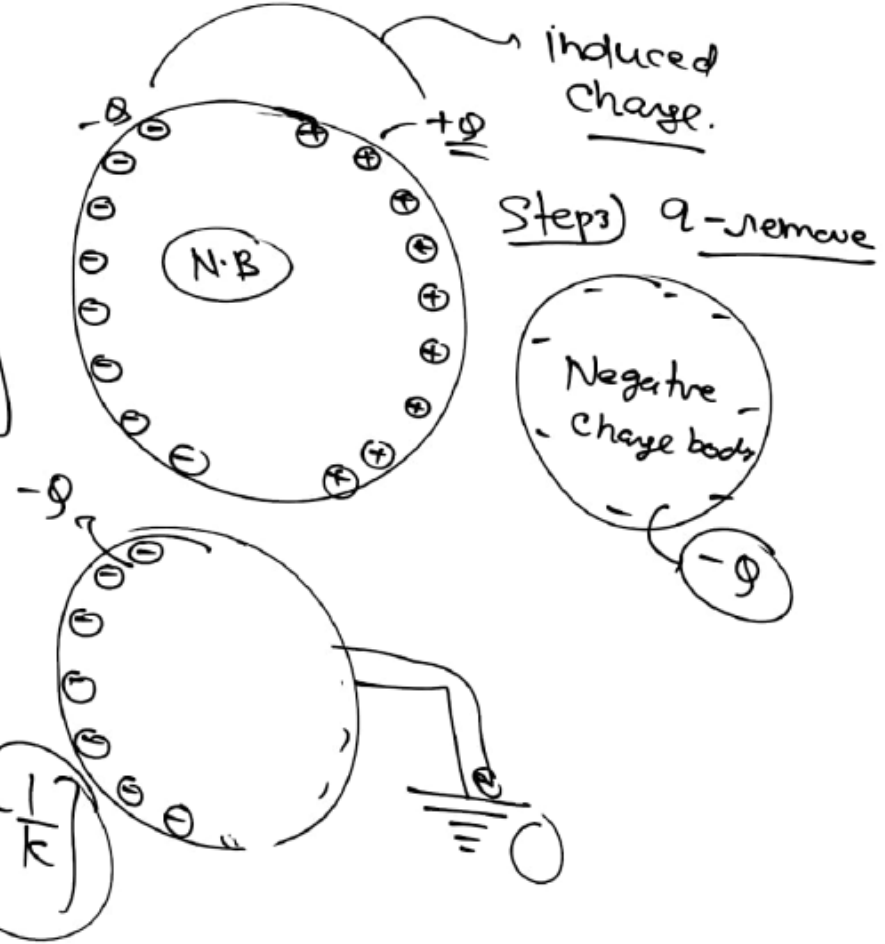
⊖ — low potential

Step II)

q [Point charge]

q

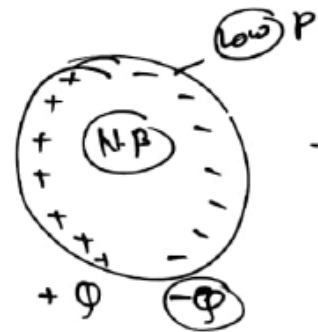
$$Q = q \left[ 1 - \frac{1}{K} \right]$$



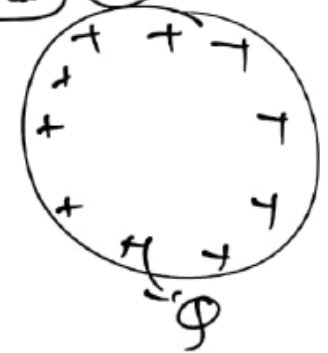
⇒ Charging by induction:-

⊖ always flow from Low potential to high potential

Step I



Step III (-q) remove

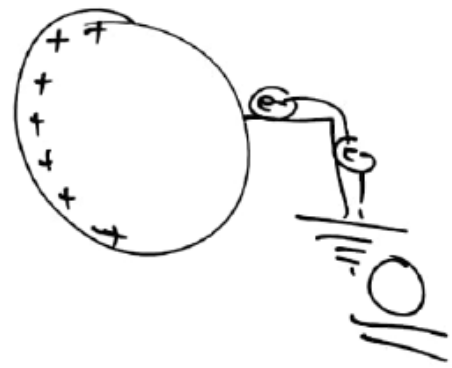


⊕ always flow from High potential to low potential

Step II Earthing of body:-

$$Q_i = q \left[ 1 - \frac{1}{K} \right]$$

induced charge.



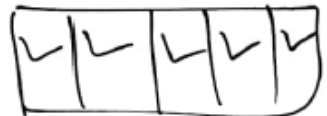
K = dielectric constant

books

33 Question (NEET 2021)  
NCERT

NCERT [Reading]  
↳ Examples (✓)  
(Ex + Addition + Exemplar)

NEET



34 PYQP

JEE mains

PYQP-20

HCV

↳ doubt