Related Problems

Calculate the number of electrons which will together weigh one gram.
Calculate the mass and charge of one mole of electrons.

(i) Mass of one electron = 9.10939×10^{-31} kg

∴ Number of electrons that weigh 9.10939×10^{-31} kg = 1

∴ Number of electrons that will weigh 1 g $(1 \times 10^{-3}$ kg)

$$= \frac{1}{9.10939 \times 10^{-31} \text{ kg}} \times \left(1 \times 10^{-3} \text{ kg}\right)$$

$= 0.1098 \times 10^{-3 + 31}$

$= 0.1098 \times 10^{28}$

$= 1.098 \times 10^{27}$

(ii) Mass of one electron = 9.10939×10^{-31} kg

Mass of one mole of electron = $(6.022 \times 10^{23}) \times (9.10939 \times 10^{-31}$ kg)

$= 5.48 \times 10^{-7}$ kg

Charge on one electron = 1.6022×10^{-19} coulomb

Charge on one mole of electron = $(1.6022 \times 10^{-19}$ C$)(6.022 \times 10^{23})$

$= 9.65 \times 10^{4}$ C