LGS GROU

A PROJECT OF LA

Name: Salina Sajjal

Subject: [redacted] Chemistry

	A	B	C	D
1	○	●	○	○
2	●	○	○	○
3	●	○	○	○
4	○	○	●	○
5	○	○	○	●
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
10	○	○	○	○

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Question no: 2

(i)

Positive rays produced by the hydrogen gas are basically the protons and cathods rays are the fast moving electron. As proton are 1836 times navier than electrons therefore the e/m value of hydrogen gas positive rays is 1836 time smaller than that of cathode rays.

(ii)

Pressure are necessary of discharge tube.

A high pressure the greater number of molecules of molecules creates hindrance in the way of electrons, and does not let the e⁻ pass through them. Therefore, it is necessary to decrease the pressure in discharge tube to get the cathode rays.

(iii)

Frequency

- Frequency (ν) is the number of waves passing through a point per second.
- It is denoted by ν
- $\nu = \frac{c}{\lambda}$

Wave number

- Wave number ($\bar{\nu}$) is the number of waves ~~lenght~~ per unit lenght, and it is reciprocal to wave lenght
- It is represented by $\bar{\nu}$
- $\bar{\nu} = \frac{1}{\lambda}$

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Millikan's Oil Drop Method:

In 1909.

Millikan's determined the charge electron by simple method.

Apparatus:

It is consist of a electric chamber.

Part: It has two part.

1) The electric chamber is filled with air.
2) The pressure of air is adjusted by Vaccum pump.

2) Electrodes:

There are two electrodes A and A'.

- The electrodes is used to generate electric field between the electrods.
- The top plate has a fine hole.

3) Atomizer:

A fine spray of oil droplets created by an atomizer. A few droplets passes through the hole of top electrode into the region between the charged plates.

4) Microscope:

One of them can observed to the micrascope.

5) Bright speck:

The droplets, when illuminated to the direction of view, appear in the microscope bright specks against a dark background.

Working:

Absence of Electric fields:

The droplet falls under the force of gravity when

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applying electric field. The velocity of droplets is determined. The velocity of droplets (v_1) depend upon it's weight, mg

$$V_1 \propto mg \quad \text{---(i)}$$

m is the mass of droplet and g is the acceleration due to gravity.

Using of X-rays:

After that the air between the electrodes is ionized by X-rays. The droplet under observation. The droplets under observation takes up an electron and gets charged.

Present of Electric field:

Now connect A and A' to the battery which generates the electric field having a strenght E. The droplet moves upwards against the action of gravity with a velocity (V_2).

$$V_2 \propto Ee - mg \quad \text{---(ii)}$$

where 'e' is the charge on the electron and Ee is the upward driving force on the droplet due to applied electrical field of strenght E

Dividing equation (i) and (ii)

$$\frac{V_1}{V_2} = \frac{mg}{Ee - mg} \quad \text{---(3)}$$

- V_1 and V_2 are recorded with the help of microscope
- The factor E and g is also known.

Value:of

The value of Millikan found was 1.59×10^{-19} Columbs and recent research value is discovery of 1.6022×10^{-19} columbs