



LGS GROUP OF COLLEGES

A PROJECT OF LAHORE GRAMMAR SCHOOL

Sheet # _____

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Subject: Chemistry Test No. WT-5 Date: 20-11-2024

A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	Marks Obtained			
1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	11	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	16	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	12	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	17	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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SUBJECTIVE TYPE

PART-I

SHORT ANSWERS

(i) E/M VALUE OF HYDROGEN

The E/m value of positive rays is less than the cathode rays and depend upon the nature of the gas. Higher is the gas, smaller is the e/m value.

"The mass of positive rays is 1836 times more than the cathode rays" the E/m value of ^{positive rays} hydrogen gas is to be obtained from hydrogen gas is highest because of the value of "m" is of hydrogen is smaller than any other gas. Hence the e/m value of hydrogen gas is 1836 times less than cathode



ii)

DECREASE IN PRESSURE OF DISCHARGE TUBE

At high pressure, the gas molecules ^{the moment} of electrons between the cathode. The pressure is reduced to 0.01 torr. Fluorescent Screen is produced and then production of cathode rays is determined.

iii)

DIFFERENTIATION BETWEEN FREQUENCY AND WAVE NUMBER

<u>Frequency</u>	<u>wave number</u>
<u>Definition</u>	
Frequency is the number of waves passing through a point per second	Wave number is the number of waves per unit length, and is reciprocal of wavelength.
<u>Representation</u>	
It is represented by " ν "	It is represented by " $\bar{\nu}$ "



PART - II

LONG ANSWERS

Q. NO. 3

CHARGE ON ELECTRON

INTRODUCTION:

In 1909 Millikan determined the charge on the electron by using a simple apparatus.

CONSTRUCTION:

It consists of two air chamber with two plates. The upper plate has a hole in it. Air is present between the plates where its pressure can be reduced by vacuum pump.

WORKING:

Production of ^{oil} gas spray:

The ^{oil} gas spray is produced by atomizer.

Path of drop:

The ^{oil} gas passes through the hole in upper plate and the space between the plates from which one of them is studied under the microscope.

View in microscope:

As the drop illuminate perpendicularly from the ~~to~~ view it appears in the microscope as a bright speck with dark background.

Drop of oil:

The drop of the oil falls under the gravity without any electric field.

Value of v_t :

The v_t can be determined



$$v_1 \propto mg \quad \text{--- (i)}$$

where m is the mass of drop and g is the acceleration due to gravity

Ionization:

The drop is then atomized & ionized under the influence of gravity and X-ray. They get an electron and become charged.

Production of electric field:

Now connect the both plates A and A' with a battery so that they produce an electric field with strength E . The drop moves upward.

Value of v_2 :

$$v_2 \propto Ee - mg \quad \text{--- (ii)}$$

where e is charge on electron.

Dividing eq (i) & (ii)

Determining the charge:

$$v_1 = mg$$

$$v_2 = Ee - mg$$

Here the value of v_1 and v_2 is calculated other factors like E and g are also known. The value of m is found by changing the electric field in such a way that the drop is suspended in the chamber.

Charge on electron:

By putting the values in eq (ii) the charge on electron was calculated as 1.59×10^{-19} coulomb which is very close to the recently measured charge on electron which is 1.6022×10^{-19} coulomb. It is the smallest charge present on the electron.