**Development of Virtual lab :Round 2 (R2) - Template (Worksheet)**

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| **Name of Faculty:**Dr. Anurag Chauhan  **Institute:** Rajkiya Engineering College Banda  **Email ID** (as submitted in the registration form)**:** anurag.chauhan36@gmail.com  **Discipline to which the Lab belongs:** Chemistry  **Name of the Lab:** Basics of Chemistry  **Name of experiment:** Verification Of JJ Thomson Experiment  (only one Experiment per worksheet. for submitting more than one experiments, please fill up another worksheet)**:**  **Kindly Refer these documents before filling the worksheet**   1. **Guidelines for Round 2:**     1. **Presentation on Storyboarding :** [**http://bit.ly/R2\_Storyboard\_PPT-Online**](http://bit.ly/R2_Storyboard_PPT-Online) 2. **Samples of Round 2 \***    1. **Fluid-Mechanics: :**[**http://bit.ly/Fluid\_mech\_R2\_sample**](http://bit.ly/Fluid_mech_R2_sample)    2. **Numerical-Methods-Lab:** [**http://bit.ly/Numerical\_R2\_sample**](http://bit.ly/Numerical_R2_sample)    3. **Digital-Electronics-Lab:** [**http://bit.ly/Digital-Applications\_R2\_Sample**](http://bit.ly/Digital-Applications_R2_Sample)   **\*** Please note that the above samples are for reference only, their content may differ from yours, depending on the Cognitive levels & Tasks it was designed for, you need not copy the exact way of writing Round 2 from above samples.. Just follow the below document outline structure of the R2 documentation as is. |

**Round 2**

**1. Story Outline:**

When it was believed that atoms are fundamental building blocks of material then this experiment proved it to be wrong.

Thomson’s this experiment which cathode ray tube show that atoms contains negatively charged particles named as electron and when he used Maxwell theory an tried to explore it more, he get to know that there was an specific characteristics observed that charge to mass ratio remain constant when we change the external magnetic field.

**2. Story:**

**2.1 Set the Visual Stage Description:**

1. Enter the value of E and B.

2. To determine “v”

3.Press the click button to proceed.

4.Observe the e/m ratio.

5.Reverse it again with different value of E and B.

**2.2 Set Challenges and Questions/Complexity/Variations in Questions:**

1. Student will be asked questions based on various cognitive levels. List of Questions provided in Round1 document.

2. Student will be asked to solve. Questions.

**2.3 Conclusion:**

**2.4 Equations/formulas:**

* 1. Electron enter the region between the plates with an velocity ‘v’ in the x- direction, both the applied field gives rise to force on the electron.

These force are in the y-direction:

F (electric) = eE

Where, E is the magnitude of the electric field.

And B is the magnitude of magnetic field is opposed to the force on the electric field.

F (magnetic) = evB

If these forces balance, then there will be no deflection of the electron in y-direction, i.e, all the electrons motion will be in the x-direction. If the forces balance, then the total force on the electron will be zero, i.e

F (electric) + F (magnetic) = 0

eE-evB =0

v=E/B

there is only electric field in y-direction that is F (electric )= E\*e and no force in x-direction

y=1/2\*at^2

y=1/2\*eEt^2/m

since, we know that,

t=x/v

e/m=2yE/x^2\*B^2