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**BASIC ELECT ASSIGNMENT**

**QUESTION 1:**

**USING THE CONCEPT OF NEWTON'S SECOND LAW OF MOTION, DESCRIBE THE MAGNITUDE AND DIRECTION OF THE ACCELERATION OF AN ELECTRON BEING SHOT HORIZONTALLY INTO A CLOSED SPACE WITH A UNIFORM FIELD BEING DIRECTED UPWARDS:**

EXPLANATION TO QUESTION 1:

Newton's second law of motion states that "When an unbalanced force acts on a particle, the particle will accelerate in the direction of the force with a magnitude that is proportional to the force"

Therefore, on entering the field there is a vertical downward force acting on the electron. This is because electric force acts in the opposite direction as the electric field and the electric field is directed upwards.

The magnitude of the force is given as **F=Eq**

Where E is the electric field strength;

q is the charge of the electron;

No force acts horizontally. Hence, the magnitude of the acceleration is gotten from an explicit form of Newton's second law to give **F=ma;** where m is mass; a=acceleration;

**a=F/m;** Recall that **F=Eq**; thus substituting F into the acceleration formula we obtain:

$$a=Eq/m$$

The direction of a is downward just like the way force, F is directed because in line with the second law of Isaac Newton, the particle will accelerate in the direction of the force; making Force proportional to acceleration.

**QUESTION 2:**

**DESCRIBE THE ELECTRIC FIELD, MAGNETIC FILED AND ELECTRIC CURRENT WITH RESPECT TO CHARGES**

EXPLANATION TO QUESTION 2

Electric field is a region in space in which charges experience electric forces (i.e either attractive or repulsive forces). If the test charge is positive then the direction of the electric force and electric field will be positive but when the test charge is negative then the direction is opposite.

An Electric field is not a single vector quantity but an infinite set of vector quantities associated with each point in space; this is generically called **"VECTOR FIELD"**

Therefore, if an electric field exists within a conductor, the field exerts a force on every charge in the conductor, causing the free charges to move.

This elucidates the theory of electric current flow.

**NB:** *"Electric current is the flow of Electric charge"*

***Mathematically:***

**E=F/q;** Where E=Electric field; F=Force; q=charge;

**Magnetic field** is defined as an invisible field that exerts magnetic force on substances which are sensitive to magnetism. Magnets also exert forces and torques on each other through the magnetic field they create.