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DEPT.: CIVIL ENGR.

COURSE CODE: ENG 221

COURSE TITLE: BASIC ELECTRICAL ENGINEEING

**ASSIGNMENTS**

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 upward.

**Ans**: Newton’s Second law of motion states that the acceleration of an object as produced by a net force is directly proportional to the magnitude of the net force and inversely proportional to the mass of the object.

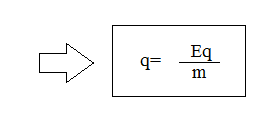
Therefore, on entering the field, there is a vertical downward force acting on the electron. This is because electric force acts in the opposite direction as the electric field and the electric force acts in the opposite direction as the electric field and the electric field is directed upward.

The magnitude of the force is given by **F= Gq,** where E is the electric field strength and q is the charge of the electron no force acts horizontally. Hence, the magnitude of acceleration is gotten using Newton Second Law.

**F=ma** where m=mass, F=force, a=acceleration

F Eq

a= m = m



The direction of a is downward just like the way forces, F is directed because according to Newton’s Second Law, force is directly proportional to acceleration.

1. Describe electric field, magnetic field and electric current with respect to charges.

**Ans**: Electric field is defined as the electric field per unit charge. The direction of the force it would exert on a positive test charge. The positive charge, the electric field is radially, and radially upward to the negative charge.

Magnetic field is defined as a field of force surrounding a permanent magnet or a moving charge particles, in which another permanent magnet or moving charge experiences a force compare electric field.

Electric current is defined as the rate at which charge flows through a surface for example, a cross sectional wire.