**OMORODION OSAROGIE YOMA**

**COMPUTER ENGINEERING**

**19/ENG02/051**

**ENG 221 ASSIGNMENT**

**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**

The attractive or repulsive interaction between any charged object in the electric forc e like any force, its effects upon objects is described by Newton’s law of motion. The electric force F joins the long list of other forces that can act upon objects.

Newton’s laws are applied to analyze the motion (or lack of motion) of objects under the influence of such a force or combination of forces. The analysis usually begins with the construction of a free body diagram in which the type and direction of the individual forces are represented by vector arrows and labeled according to type. The magnitudes of forces are then added as vectors in order to determine the resultant sum, also known as the net force. The net force can then be used to determine the acceleration of the defect.

**2.)** **Describe electric field, magnetic field and electric current with respect to charge**

ELECTRIC FIELD: The electric field is defined mathematically as a vector field that associates to each point in space the (electrostatic or Coulomb) force per unit of charge exerted on an infinitesimal positive test charge at rest at that point. The derived SI units for the electric field are volts per meter (V/m), exactly equivalent to Newton’s per coulomb (N/C). An electric field (sometimes E-field) is the physical field that surrounds each electric charge and exerts force on all other charges in the field, either attracting or repelling them. Electric fields originate from electric charges, or from time-varying magnetic fields.

MAGNETIC FIELD: A magnetic field is a vector field that describes the magnetic influence on moving electric charges, electric currents, and magnetized materials. A charge that is moving in a magnetic field experiences a force perpendicular to its own velocity and to the magnetic field. The effects of magnetic fields are commonly seen in permanent magnets, which pull on magnetic materials such as iron, and attract or repel other magnets. In addition, a magnetic field that varies with location will exert a force on a range of non-magnetic materials by affecting the motion of their outer atomic electrons.

ELECTRIC CURRENT: An electric current is a stream of charged particles, such as electrons or ions, moving through an electrical conductor or space. It is measured as the net rate of flow of electric charge past a region. The moving particles are called charge carriers, which may be one of several types of particles, depending on the conductor.