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Matric: 19/eng04/038

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1.) Using the 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

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

Solution

1.) The attractive or repulsive interaction between any two charged objects is an electric force. Like any force, its effect upon objects is described by Newton's laws of motion. The electric force - Felect - 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 the 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 object.

2.) Electric field : an electric property associated with each point in space when charge is present in any form. The magnitude and direction of the electric field are expressed by the value of E, called electric field strength or electric field intensity or simply the electric field. Knowledge of the value of the electric field at a point, without any specific knowledge of what produced the field, is all that is needed to determine what will happen to electric charges close to that particular point.

Magnetic field : attraction or repulsion that arises between electrically charged particles because of their motion. It is the basic force responsible for such effects as the action of electric motors and the attraction of magnets for iron. Electric forces exist among stationary electric charges; both electric and magnetic forces exist among moving electric charges. The magnetic force between two moving charges may be described as the effect exerted upon either charge by a magnetic field created by the other.

Electric current : any movement of electric charge carriers, such as subatomic charged particles (e.g., electrons having negative charge, protons having positive charge), ions (atoms that have lost or gained one or more electrons), or holes (electron deficiencies that may be thought of as positive particles).Electric current in a wire, where the charge carriers are electrons, is a measure of the quantity of charge passing any point of the wire per unit of time. In alternating current the motion of the electric charges is periodically reversed; in direct current it is not. In many contexts the direction of the current in electric circuits is taken as the direction of positive charge flow, the direction opposite to the actual electron drift. When so defined the current is called conventional current.