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Mechatronics Engineering

Basic Elect.

1. Using concepts of Newton's 2nd law. Describe the magnitude & direction of acceleration of electron beam shot horizontally into a closed space with uniform field beam directing upwards.

Ans:

The attraction/repulsion interaction btw any 2 charged objects is an 'Electric force' like any force it's effect upon objects is described by Newton's law of motion. The electric force joins the long list of other forces that act upon objects. Newton's law applies to analyse the motion of objects under the influence of such force/combination of forces. The analysis usually begins with construction of a free body diagram in which the type & direction of the individual forces are represented by vector arrows & labels according to type. The net force can be used to determine the acceleration of the object.

2. Describe electrical field, Magnetic field & Electric current with respect to charges.

Ans:

Electric field is defined as the electric force per unit charge. The direction of the field is taken to be direction of force it would exert on a positive test charge. The electric field resulting outwards from a positive charge & towards a negative point charge.

Interaction of a magnetic field with charge, if the charge is at rest, there is no interaction. If the charge however is subjected to a force, the size of which increase in direct proportion with the velocity of the charge.

An electric current is a stream of charged particles

such as electrons/ions moving through an electrical conductor ~~is~~, it is measured as the net of flow of electric charges past a region.