Magnetic Field

Q1. An electron that has velocity v = (2.0*10^6 m/s)i + (3.0*10^6 m/s)j moves with the uniform magnetic field (b =0.030t)I – (0.15t)j (a)Find the force on the electron due to magnetic field.(b)Repeat your calculation for proton having same velocity.

Q2. An alpha particle travel at velocity of magnitude 550m/s through uniform magnetic field of magnitude 0.045t (an alpha particle has the charge of + 3.2 * 10^-19C and mass of 6.6*10^-27 kg). the angle between v and B is 52 degree. What is the magnitude of (a)Force F b acting on the particle due to filed(b)Acceleration of particle due to Fb(c)Does the speed of particle increase, decrease or remain same.

Q3) a particle of mass 10 g and charge 80μC move through uniform magnetic field in a region where the free fall acceleration is -9.8j m/s^2.the velocity of particle is constant 20i km/s which is perpendicular to magnetic field. what then, is magnetic field?

Q4) an electron moves through uniform magnetic field given by B= Bxi + (3.0Bx)j. At a particular instant, the electron has velocity v = (2.0i + 4.0j)m/s and the magnetic force acting on it is (6.4 * 10^-19N)k. find Bx.

Q5) an electron has initial velocity of (12.0j + 15.0k) km/s and the constant acceleration of (2.00*10^12 m/s^2)i in a region in which uniform electric and magnetic field are present. If B = (400μT)i. find the electric field E