**(Q5)** An inductor has an inductance which is found experimentally to be of the form where L0 = 30 mH,  = 0.87 mm, and  is the displacement of a movable element. Its winding resistance is measured and found to equal 110 m. The inductor is driven by a sinusoidal current source of the form  where = 5.5 A and = 100(50 Hz). With the displacement held fixed at , calculate (a) the time-averaged magnetic stored energy (Wfld) in the inductor and (b) the time-averaged power dissipated in the winding resistance.