**(Q2)** The rotor is shown in Fig. 1. The rotor is nonmagnetic and is placed in a uniform magnetic field of magnitude B0. The coil sides are of radius R and are uniformly spaced around the rotor surface. The first coil is carrying a current I1 and the second coil is carrying a current I2*.*Assuming that the rotor is 0.30 m long, R = 0.13 m, and B0 = 0.85 T, find the -directed torque as a function of rotor position for and .Write an expression for the rotor torque as a function of the rotor position 



Fig.1