[1] Consider a single turn circular loop of radius 20 cm.
   a) At what point along the axis is the magnetic field 1% of that at the center?
   b) Find the current in the plane of the loop required to cancel the earth’s magnetic field of 0.7 G.

[2] A wire of length 32 cm is suspended by flexible leads above a long straight wire. Equal but opposite currents I pass through the two wires such that the 32 cm wire floats 2 mm above the long wire with no tension in the suspension leads. If the mass of the 32 cm wire is 28 gms what is the current I?

[3] A long solenoid with 50 turns/cm carries a current of 2 A. The solenoid is filled with iron and B is measured to be 1.72 T
   a) Neglecting end effects, what is $B_{app}$?
   b) What is $M$?
   c) What is the relative permeability $\kappa_m$?

[4] Consider a toroidal coil of average radius 20 cm and a cross sectional area of $\pi$ cm$^2$. It is wrapped uniformly with 7500 turns of wire carrying a current of 14 A.
   a) What is the magnetic field inside the toroid at $r = 20$ cm?
   b) What is the magnetic field in the toroid if it is filled with iron of permeability 500?