Assignment 2

1)Why use MRAM instead of SRAM or DRAM?

2)An electron in a semiconductor is affected naturally by a potential V(x,y,z) due to the effects of atomic nuclei surrounding it, depending on its (x,y,z) spatial position in the material. If it's total energy E is only due to this potential plus its free energy due to its momentum p, what is E(x,y,z) in terms of V(x,y,z), p, and its mass m?

3)If a valence electron escapes to the conduction band, what is the added potential energy that it has absorbed equal to (in words), and how did it receive this energy?

4)If you were building a microchip, would you use bipolar transistors or MOSFETs? Why?

5)You are applying voltage across the gate of a MOSFET that stirs current across it. What kind of field is being applied to the electrons that motivates them to move, and explain how this field fits into the formula for the total energy of the electron.