Phy 410
Quiz #1, Jan 22, 2010

a) There are 6 magnets each can point either up or down with equal probability (6 points)

- **i) How many possible microstates are there for this system?**
- **ii) What is the probability of seeing the <u>microstate</u> (↑↑↑↓↓↓)?**
- **iii) What is the probability of seeing a <u>macrostate</u> (N,s), 2s=spin excess, for N=6, s=1?**

b) A system consis of 2 quantum harmonic oscillators (N=2). The total number of energy quanta, n=3. (4 points)

- **i) How many microstates ($N;s_1,s_2$) correspond to this macrostate (N,n)?**
- **ii) Write down these microstates.**