**Properties of Materials**Quiz 2 (Date: 10/08/2010)

**Section A (Make up for Quiz 1)**

1. Show the [110] and  planes in a simple cubic latice. Calculate the angle between these two planes. (10x3)

{Bonus question: What is the direction of line of intersection of these two planes? (10)}

1. Find the miller indices of plane that makes intercepts of 6 Å, 3 Å, 6 Å on the three axes on a tetragonal unit cell with c/a = 2. (20)
2. Interpalnar distance between consecutive (3 2 1) planes is 1.125 Å. Determine the lattice parameter and volume of unit cell. (20)
3. Chose the correct answer: (2x5)
4. Which of the following solids have no definite melting point:
5. Crystalline solids
6. Semicrystalline solids
7. Non crystalline/amorphous solids
8. Which amongst the following is isotropic:
9. Crystalline solids
10. Semicrystalline solids
11. Non crystalline/amorphous solids
12. Give example an example of: (2x5)
13. metal with BCC crystal structure
14. metal with FCC crystal structure

{(c) Bonus Question: metal with SC structure (5)}

**Section B**

 **(Those taking only B should submit their papers by 9.40AM)**

1. Find atomic radius, R, for SC, BCC and FCC crystal systems, each with *a* = 6Å. (10x3)
2. Find energy of an electron and an x-ray possessing associated wavelengths of 1Å each I units of Joules and eV. (10x4)
3. Go to the OCC lab and use Materials Studio to obtain the following schematics and write their crystal structure and lattice parameters from the info panel on bottom left of file window.
4. NaCl (under ceramics)
5. ZnS (under semiconductors)
6. Diamond (under ceramics)
7. Urea (under repeat units) along y
8. Quinone (under drugs) along z
9. Ethylene (under crystalline polymers) along z

You need to write your name and submit the six schematics with short description and information on each in RH 410 by 5.00 PM today.