

## Exam 3 Topics – Chem1A

### Chapter 8

- Type of bonds
- Lewis Structures
- Basic idea behind lattice energy
- Resonances & isomers
- Formal charges & their uses
- Electronegativity
- Bond dissociation energies
  - Using them to calculate the  $\Delta H$  of a reaction
- VSEPR theory
  - Electron-pair & molecular geometry
- Polarity of bonds and molecules

### Chapter 9

- Valence Bond Theory
  - Hybridization
  - Relationship between VBT and shapes
  - Why VBT was invented
- $\sigma$  bonds
- $\pi$  bonds
- Molecular Orbital Theory
  - Why MO is better than VBT
  - HOMO & LUMO
  - Calculate bond order
- Being able to show the difference and similarities between VBT and MO

### Chapter 6

- Specific heat capacity
- Phase changes
- Heat of fusion
- Heat of vaporization
- Understand what the sign of  $\Delta H$  means
- $q = -q$  (calorimetry / first law of thermodynamics)
- Use of Hess's Law
- $\Delta H^\circ_{\text{rxn}} = \Sigma[\Delta H^\circ_f(\text{products})] - \Sigma[\Delta H^\circ_f(\text{reactants})]$