• Energy flow in Chemical Reactions
  o ______________________
  o ______________________

• Exergonic Reaction
  o Net ________________ of energy
  o ______________________ reactions
  o Products have ___________ energy than reactants.

• Endergonic Reaction
  o Net ________________ of energy
  o ______________________ reactions
  o Products have ___________ energy than reactants

• Rate of Chemical Reactions
  o ______________________
  o ______________________
  o ______________________
  o ______________________
  o ______________________
    ▪ _________________ - Biological catalysts

• Biochemistry
  o All chemicals are either ______________________ or ______________________.
  o Inorganic
    ▪ Water
    ▪ ______________
    ▪ ______________ & ______________
Organic
- Carbohydrates
- ______________________
- Proteins
- ______________________

Inorganic Compounds
- Water
  - High heat capacity
  - High heat of ______________________
  - ______________________
  - Reactivity
  - ______________________
- Salts
  - ______________________
    - Dissociate into separate ions (AKA ______________________)
      - ______________________
      - ______________________
    - Ions play specific roles in our bodies
    - Ionic balance is vital for ________________________.
- Acids and Bases
  - Acids: proton ______________________. By ______________________ hydrogen ions.
  - Bases: proton ______________________. They ______________________ H+ ions.
    Bases dissolve and release ______________________ ions
  - Examples:
    - Acid: HI →
    - Base: KOH →
• pH Scale is a measure of the ________________ of _______________ ions.
  • The more [H+] the more _______________ the solution. The range is from ________________.
  • When a solution has equal number of _______________ & _______________ ions. The pH of that solution will be ____________.
    o An example of this would be:
  • Solutions with high _______________ concentration but low _______________ making them _______________. The range for these solutions is ________________.
  • EX.
    o pH of 8.3
      ▪ Acidic  Basic  Neutral
      ▪ [H+] ions are high or low
    o pH of 2.4
      ▪ Acidic  Basic  Neutral
      ▪ [H+] ions are high or low
    o pH 7.10
      ▪ Acidic  Basic  Neutral
      ▪ [H+] ions are high or low

• Organic Compounds
  o Molecules said to be organic contain?
    ▪ Exceptions?
  o What does Carbon do with electrons?
    ▪ Is it electropositive  electronegative  electroneutral ?
  o Major Organic compounds
    ▪ __________________________
    ▪ __________________________
    ▪ __________________________
Polymers
- Many organic compounds can make up polymers which are composed of similar units called ___________________ or ___________________.
  - *Which are synthesized by _______________________________.
  - *And broken down by _________________________________.

- Carbohydrates!
  - These include ________________ and sugars.
  - These are a ready to use available source of energy.
  - 3 classes
    - ______________________________
    - ______________________________
    - ______________________________
  - Monosaccharides
    - ________________ carbon atoms.
    - ________________
      - Containing 5 carbons
      - Ribose & Deoxyribose
    - ________________
      - Contains 6 carbons
      - Glucose (blood sugar)
  - Disaccharides
    - Two ________________ put together. “______________ sugars”
    - Can these pass through the cell membrane? YES NO
    - Ones to remember
      - ______________________________
      - ______________________________
      - ______________________________
- Disaccharides are formed by ________________
  ________________ of two monosaccharides.

  o Polysaccharides
    - Polymers of monosaccharides.
    - Formation of Polysaccharides occurs by?
      - ________________: plants
      - ________________: animals

Lipids!
  - Soluble or insoluble in water?
  - Types of Lipids
    - ________________
    - ________________
    - ________________
    - ________________