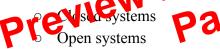
Section 1

- ➤ Metabolism (from the Greek: metabole, change) is an emergent property of life that crises from interactions between molecules within the orderly environment of the cell.
- ➤ Metabolic pathway- begins with a specific molecule, which is then altered in series of defined steps, resulting in a certain product
- > These degradative processes are called catabolic pathways, or breakdown pathways.
- ➤ Anabolic pathway, in contrast, consume energy to build complicated molecules from simpler ones; biosynthetic pathways.
- ➤ Bioenergetics the study of how organisms manage their energy resources
- > Energy- is the capacity to cause change
- ➤ Energy can be associated with the relative motion of object, this energy is called kinetic energy
- ➤ Heat, or thermal energy, is kinetic energy associated with the random, movement of atoms or molecules
- An object not presently moving may still possess energy. Energy that is not kinetic is called potential energy, it is energy that matter possesses because of its locality or structure.
- > Chemical energy is a term used by biologists to reference potential energy available for release in a chemical reaction.
- > Thermodynamics- the study of he energy transformations that occur in a collection of matter



- > First law of thermodynamic energy can be transferred and transformed, but it can not be created nor destroyed
- > Second law of thermodynamic- every energy transfer or transformation increase the disorder (entropy) of the universe.

Section 2

- Free energy measures the portion of a system's energy that can perform work when temperature and pressure are uniform throughout the system, as in a living cell.
 - \circ $\triangle G = \triangle H T \triangle S$
 - △G: Free energy
 - △H: Symbolizes the change in the system's enthalpy
 - \blacksquare S: Is the change in the system's entropy
 - T: Is the absolute temperature in Kelvin (K). K = C + 273
- > Exergonic reaction- proceeds with a net release of free energy