**AP BIOLOGY REVIEW – DAY 2**

**ENERGY, ENZYMES, PLANTS, GIBBS FREE ENERGY**

1. Energy is defined as ...........................................................................
2. What are the differences between catabolic and anabolic reactions?
3. What is entropy?..................................................................................
4. How does ATP power cellular work?.......................................................................................................................
5. How do enzymes control the rate of chemical reactions?........................................................................................
   * 1. Sketch a graph showing the energy changes with an exergonic reaction with and without enzyme present

* + 1. Explain the “induced fit” model of enzyme action.........................................................................................
    2. Explain how metabolic pathways are regulated by allosteric enzymes and cooperativity

1. The three steps in respiration are.
   1. Glycolysis starts with ................................... and produces ....................................
   2. Krebs cycle starts with ................................... and produces ....................................
   3. electron transport chain starts with ................................... and produces ....................................
2. Where do the following occur:
   1. Glycolysis .................................................................................
   2. Kreb’s cycle ..............................................................................
   3. electron transport chain .............................................................
3. What are the two major parts of photosynthesis? ...................................................................................................
   1. Where does each part occur?........................................................................
   2. What enters the light reactions? ................................... What is produced?...................................................
   3. What enters the Calvin cycle? ...................................... What is produced?....................................................
4. What is chemiosmosis?.............................................................................................................................................................
5. Where in a cell does chemiosmosis occur (2 organelles) .........................................................................................................
6. What is photophosphorylation?..................................................................................................................................................
7. The three main parts of a plant are ..........................................................................................................................................
8. The three basic tissue types in a plant are ...............................................................................................................................
9. The differences between primary and secondary growth are ..................................................................................................
10. Compare and contrast transpiration and translocation.............................................................................................................
11. What is the difference between xylem and phloem?................................................................................................................
12. What are the five major plant hormones and their actions?.....................................................................................................
13. Briefly explain the role of auxin in phototropism .....................................................................................................................
14. What is photoperiodism?...........................................................................................................................................................
15. How are short day plants and long day plants different?...........................................................................................................
16. **Draw and Label:** inputs and outputs of a plant cell in photosynthesis
17. **Draw and Label:** inputs and outputs of a plant cell for respiration
18. **Draw and Label:** leaf in a C3 plant verse a C4 plant

# ∆G = ∆H - T ∆S

24. What is Entropy? = a measurement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

25. When ∆S is positive this means there is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

26. When ∆S is negative this means there is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

27. What is ∆H? = a measurement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

28. When ∆H is positive this means the reaction is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

29. When ∆H is negative this means the reaction is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

30. What is Gibbs Free energy? = a measurement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

31. When ∆G is positive this means the reaction will happen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

32. When ∆G is negative this means the reaction will happen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ∆G (Joules) |  | ∆H (Joules) | T (Kelvin) | ∆S (J/K) |
|  |  | 1000 | 300 | 5 |
|  |  | 1100 | 300 | 5 |
|  |  | 1200 | 300 | 5 |
|  |  | 1300 | 300 | 5 |
|  |  | 1400 | 300 | 5 |
|  |  | 1500 | 300 | 5 |
|  |  | 1600 | 300 | 5 |
|  |  | 1700 | 300 | 5 |
|  |  | 1800 | 300 | 5 |
|  |  | 1900 | 300 | 5 |

What happens to ∆Gwhen ∆H goes up ? WHY?

What happens to ∆Gwhen ∆H goes down ? WHY?