

AP Bio – Metabolism Unit Exam Review

Chapter 6: Intro to Metabolism

- How does an enzyme catalyze a reaction?
- Why is ATP an important molecule in metabolism?
- What is the change in free energy at chemical equilibrium?
- Increasing the substrate concentration in an enzymatic could overcome which of the following?
- What increases whenever energy is transformed?
- How are reactions coupled in terms of Gibbs free energy?
- What are characteristics of exergonic reactions?
- What term most precisely describes the general process of breaking down large molecules into smaller ones?
- ATP generally energizes a cellular process by doing what?
- Why would a solution of starch at room temperature not spontaneously decompose rapidly to a sugar solution?
- What is an organic, nonprotein component of an enzyme molecule called?
- What term could describe a chemical reaction that has a positive delta G?
- How can one increase the rate of a chemical reaction?
- What is the relationship between enzyme and substrate?
- How does allosteric inhibition work (be able to identify an allosteric inhibitor in a scenario)?
- What are the characteristics of catabolic pathways?
- Explain enzyme cooperativity.
- What is the induced fit hypothesis of enzyme-substrate interaction?
- What is the structure of ATP? What are its characteristics? How does it function?
- What type of macromolecule are enzymes?
- Interpret a table of enzyme activity and substrate concentration for a particular enzyme.

Chapter 50: Animal Nutrition

- What is the advantage of a complete digestive system over a Gastrovascular cavity?
- List the adaptations of a herbivorous diet
- Why are some nutrients considered “essential” in the diets of animals?
- What types of organisms possess a Gastrovascular cavity to digest food?
- Why can cows survive on diet consisting almost entirely of cellulose?
- What is the substrate of salivary amylase?
- What is peristalsis?
- Know the optimal pH of all the named enzymes we discussed in class.
- What is the source of the various digestive enzymes (this is found also in the back of your pig packets)?
- Use a diagram of the human digestive system to identify the location of key events like:
 - Where does the digestion of carbohydrates occur?
 - Where does the digestion of fat occur?
 - What structure produces chyme?
 - Where does the reabsorption of water in digestion occur?
- Where are most nutrients absorbed?
- What are the characteristics and functions of pepsin?
- What are the fat-soluble and water-soluble vitamins?
- What precedes the process of intracellular digestion usually?
- The accumulation of what type of vitamin would be hazardous?
- During what stage of food processing does food first enter the body?
- What is a hormone produced by the epithelial lining of the stomach?
- How are essential and nonessential amino acids different?
- Absorbed nutrients are best described as being in what form?

Chapter 37: Plant Nutrition

- What are epiphytes?
- What condition of soil would be least conducive to plant growth?
- If you lived in an arid region and wanted to farm, what strategy would help you reach your goal?
- Why is nitrogen fixation such an important process?
- What is chlorosis?
- What soil mineral is most likely to be leached away due to a hard rain?
- What do the N-P-K numbers on a package of fertilizer refer to?
- Most crop plants acquire their nitrogen mainly in the form of what?
- What important crop plants are nitrogen-fixing root nodules an attribute of?
- What kind of soils are the most fertile?
- What is the mutualistic association between roots and fungi called?
- Use a graph of crop yield by year to answer questions about a hypothetical crop grown in an arid region.