

Review Questions:

1. What is the difference between prokaryotes and eukaryotes?
2. What are the structure and function of organelles in plant and animal cells?
3. What are the unique properties of water and the chemical bases for these properties?
4. What is an isomer? Do they have the same properties as the initial molecule? (Thalidomide causing birth defects is an optical isomer created upon ingestion.)
5. Draw the 4 major classes of macromolecules (carbohydrate, fat, protein, nucleic acid).
6. Draw dehydration and hydration synthesis reactions for all macromolecules.
7. What is the difference between anabolic and catabolic reactions?
8. Describe the formation of polymers for macromolecules.
9. Label the unique bond/linkages within macromolecules.
10. Explain the main functions for each macromolecule.
11. Describe unique properties of macromolecules.
12. Describe how enzymes work.
13. Draw an activation energy graph for a catalyzed reaction comparing it to the non-catalyzed reaction.
14. Describe the induced fit model and the lock and key model.
15. What is the difference between competitive and non-competitive inhibitors?
16. Describe how cofactors work.
17. Describe allosteric regulation.
18. Describe how feedback inhibition works.
19. Explain how pH, temperature, substrate concentration, and enzyme concentration affect enzymes and their rate of reaction.
20. How are enzymes used in the pharmaceutical industry, food industry, for digestive disorders, and in forensics?
21. What is the first law of thermodynamics?
22. Draw & describe the energy profile (graph) for anabolic & catabolic reactions. Explain using bond energies.
23. Why are catabolic reactions spontaneous?
24. How do redox reaction work?
25. What does LEO the lion says GER mean?
26. How does an oxidizing agent work? Reducing agent?
27. How do buffers work?
28. Explain the fluid mosaic model of a phospholipid bilayer.
29. What is the function of the phospholipid bilayer?
30. What are the roles of the components are in a phospholipid bilayer? (phospholipid, cholesterol, membrane proteins, glycoproteins, glycolipids)
31. Describe the 6 major ways of membrane proteins function?
32. Describe the methods of transport across membranes (passive, active, osmosis, diffusion – simple & facilitated, endocytosis, exocytosis)