

1st Semester Midterm Review Sheet – Biology 11/4/2013 – Midterm

Sections from the textbook that this exam will cover include:

1-3, 2-3, 2-4, 7-1, 7-2, 7-3, 7-4, 10-1, 10-2, 10-3, 11-4, 11-5, 35-1, 38-1

These must be answered in complete, thorough, well-developed answers. They are not 1 sentence responses. This midterm will cover all of these topics and is worth 15% of your final semester grade.

Chapter 1:

1. What is biology?
2. Describe what homeostasis is. How is it maintained in an organism? Describe how homeostasis works in the human body in relation to body temperature.
3. List the 8 characteristics of living things.
4. What are 3 differences between sexual and asexual reproduction?
5. List the levels of organization in biology from largest to smallest. Describe what each one is.

Chapter 2:

6. What are the three particles that make up an atom? Where are each found?
7. Where is the nucleus of an atom? What two particles are found in the nucleus? What is the electron cloud?
8. What are monomers? How do they relate to polymers? Likewise, what are monosaccharides and how do they relate to polysaccharides?
9. List the 4 macromolecules found in a living organism. List 3 characteristics about each.
10. Identify the reactants and products in the chemical reaction, $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$. Also, define chemical reaction.
11. What are catalysts? What do they do / why are they important?
12. What are enzymes? What do they do / why are they important?

Chapter 7:

13. Describe the 3 parts of the cell theory. Know the contributions that each scientist made in the history of the cell.
14. What are 3 differences between prokaryotes and eukaryotes? Also, what are three similarities?
15. List the function of the following parts of the cell. Nucleus, ribosomes, endoplasmic reticulum, Golgi apparatus, lysosomes, vacuoles, mitochondria, chloroplasts, cytoskeleton, centrioles.
16. Describe the cell membrane. What is the lipid bilayer? What are protein channels?
17. What is the difference between a cell membrane and a cell wall? What types of cell have cell walls?
18. Describe the process of diffusion. Do the particles go from L \rightarrow H concentration or H \rightarrow L? When does diffusion stop? Does diffusion require energy (ATP)? Does diffusion go 'down' or against' a concentration gradient?
19. Describe the process of facilitated diffusion. Do the particles go from L \rightarrow H concentration or H \rightarrow L? When does facilitated diffusion stop? Does facilitated diffusion require energy (ATP)? Does facilitated diffusion go 'down' or against' a concentration gradient?

20. Describe the process of active transport. Do the particles go from L \rightarrow H concentration or H \rightarrow L? When does active transport stop? Does active transport require energy (ATP)? Does active transport go 'down' or against' a concentration gradient?
21. Describe the process of osmosis. Do the water particles go from L \rightarrow H concentration or H \rightarrow L? When does osmosis stop? Does osmosis require energy (ATP)? Does osmosis go 'down' or against' a concentration gradient?
22. List the levels of organization in a multicellular organism from smallest to largest (simplest to complex).

Chapter 10:

23. What are 2 reasons that a cell divides?
24. Describe the 3 parts of interphase. Know that interphase is where the cell spends most of its life.
25. Describe the 4 phases of mitosis.
26. What is cytokinesis? When does it occur?
27. How many cells are produced during mitosis? Are they genetically the same or different?
28. What are cyclins? How do they work?
29. What is cancer? How does the p53 gene cause cancer?

Chapter 11:

30. Gametes are sex cells. The male gamete is sperm and the female gamete is the egg. Meiosis is the process that makes these. Describe the process of meiosis.
31. What are homologous chromosomes? Draw a picture to illustrate this.
32. What is crossing over? When does it occur? Does this increase or decrease genetic variability?
33. How many cells are produced during meiosis? Are they genetically the same or different?

Chapter 35:

34. What are the levels of organization in a multicellular organism?
35. How many organ systems make up the human body? What are the structures and functions for each?

Chapter 38:

36. What is a calorie? What is a Calorie? How many calories make up 1 Calorie?
37. List 3 ways in which water is lost from the body.
38. What is the difference between a vitamin and a mineral?

REVIEW YOUR LOGS AND YOUR VOCABULARY WORDS.