Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Honors Biology Midterm Exam Mastery Practice**

**Directions**: Answer all of the following questions on a separate sheet of paper or in your spiral bound notebook.

1. What are the functions of Carbohydrates?
2. What are the functions of Lipids?
3. What are the functions of Proteins & Enzymes?
4. What does it mean to “denature” a protein such as an enzyme?
5. Draw and label graphs comparing a reaction with and without the assistance of an enzyme.
6. What are the functions of Nucleic Acids?
7. Draw the cheat/hint for each of the macromolecules…like the “fat E” for lipids.
8. Identify each of the following molecules.









1. Draw and label a pH scale. What is the job of a pH buffer?
2. How are enzymes named? What do they all end in?
3. What is the role of DNA in protein synthesis?
4. What are the monomers/sub-units of each of the four macromolecules?
5. Distinguish between organic and inorganic.
6. Explain the statement that all compounds are molecules but, not all molecules are compounds.
7. Draw and label an example of an enzyme aided dehydration synthesis reaction. Be sure to include the enzyme-substrate reaction.
8. Explain what an organic catalyst is.
9. Identify foods that contain a majority of
	1. carbohydrates,
	2. proteins,
	3. lipids
10. What is Chargaff’s rule?
11. Compare a prokaryotic cell with a eukaryotic cell.
	1. What are the structures found in a prokaryotic cell? \*this should be a short list.
	2. What is an example of a prokaryotic cell?
12. Do animal cells have a cell wall…why or why not?
13. Why do plant cells needs considerably more water than animal cells?
14. Draw and label a cell membrane.
15. What are the four indicator solutions that you need to know and describe a positive result for each test.
16. Why do both mitochondria and chloroplasts have circular DNA? \*\*think evolution and are they a part of the cells they live in?
17. What is the role of each structure in protein synthesis?
	1. Ribosome
	2. DNA
	3. mRNA
	4. tRNA
18. What is the function of the mitochondria?
	1. What areas of the body require cells containing the greatest concentration of mitochondria? \*\*Think what would need a lot of whatever mitochondria create.
19. What is the role of a chloroplast?
20. Fill in the following chart comparing the various forms of passive transport:

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |

1. Fill in the following chart comparing the various forms of active transport:

|  |  |
| --- | --- |
| Endocytosis | Exocytosis |
| Pinocytosis:Phagocytosis: |  |

1. Compare active v passive forms of transport…be sure to use the term concentration gradient.
2. In class, we said that the **sodium-potassium pump** is the best example of active transport. Describe what occurs during this form of transport and justify why it is such a good example. What types of cell utilize this very specific transport protein?
3. Given a DNA strand of ATA CGC CAT TAG GGG CTA, what would be the complementary strand?
4. What model shape did Watson and Crick build that won the Nobel? Whose work did they use/steal to build that model?
5. What are the two strands of DNA called…how can you tell them apart?
6. Fill in the blanks in the following chart:

|  |  |
| --- | --- |
| DNA |  |
| mRNA | AUG AGG CAC GGG AUA UAG |
| Amino Acid |  |
| tRNA |  |

1. What is the name for three consecutive bases on a strand of DNA, mRNA and then for tRNA?
2. How many forms of RNA are there, name each and state it’s function in the process of protein synthesis?
3. Compare and contrast transcription and translation.
4. Compare and contrast DNA and RNA.
5. What is the difference between a doubled chromosome and a single chromosome? What is chromatin? What is another name for a double chromosome?
6. Describe the process of glycolysis. What is the net gain of ATP using glycolysis?
7. What is more beneficial aerobic respiration or anaerobic respiration?
8. What are the three forms of anaerobic respiration?
9. What are the different steps involved aerobic respiration? How much ATP is made during each step and what is the total amount of ATP made during aerobic respiration?
10. Draw and label a chloroplast…include information about structures and the chemical reactions involved in photosynthesis.
11. What factors can influence the rate of photosynthesis?
12. Draw and label a mitochondrion…include information about structures and the chemical reactions involved in aerobic cellular respiration.
13. What are the balanced equations for photosynthesis & aerobic cellular respiration?
14. Define the following terms: mutation, mutagen, & carcinogen.
15. Compare gene mutations and chromosomal mutations.
16. What is the worst kind of mutation?
17. How does a mutation impact the process of protein synthesis?
18. What are the four parts of interphase?
19. What the four steps of mitosis called?
	1. What do the roots in the word **pro**phase mean?
	2. “ “ **meta**phase?
	3. “ “ **ana**phase?
	4. “ “ **telo**phase?
20. Why do cells have to be so small?
21. Distinguish between the cytokinesis of animal cells and plant cells?
	1. Why are they different?
22. Fill in the chart below:

|  |  |  |
| --- | --- | --- |
| Type of asexual reproduction | Description | Type of organism |
| Budding |  |  |
| Fragmentation/Regeneration |  |  |
| Mitosis |  |  |
| Sporulation |  |  |
| Vegetative Propagation |  |  |

1. What disease is a result of uncontrolled cellular division?
2. Draw an animal cell during each of the phases of mitosis and describe what is happening to the cell during each phase.
3. What do the letters STERNGRR stand for and what information are they trying to convey?
4. Is fire alive, why or why not?
5. How do you correctly write a hypothesis statement?
6. Compare a dependent variable v independent variable.
7. What are experimental constants?