# Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_

# CELLS STUDY GUIDE

# Cell Basics and Homeostasis

1. Define homeostasis. Give an example of an organism attempting to maintain homeostasis.

2. What does the cell theory state (3 parts).

3. What is the difference between a prokaryotic cell and a eukaryotic cell? Give an example of each type.

4. Name the structures that are common in BOTH prokaryotic cells and eukaryotic cells.

5. What contributions did these scientists make to the study of cells: Leeuwenhoek, and Hooke?

**The Cell and Organelles**

1. Describe the structure and function of the following organelles and tell which type of cell each is found in (plant, animal, or both): nucleus, mitochondrion, chloroplast, lysosome, vacuoles, ribosomes, endoplasmic reticulum, golgi apparatus, cilia, flagella, cell membrane, cell wall and cytoplasm.

**The Plasma (Cell) Membrane and Transport**

1. Describe the structure of the plasma/cell membrane? Why do we call it a fluid mosaic model? What is its function?

2. What is the difference between passive transport and active transport?

3. Define diffusion, osmosis, and facilitated diffusion. Which type of transport are all of these (passive or active)?

4. Define endocytosis and exocytosis. Are these passive or active forms of transport?

5. Sketch a cell that is in an isotonic solution. Which way will the net movement of water be—into, out or none (use arrows)?

6. Sketch a cell that is in a hypotonic solution. Which way will the net movement of water be—into, out or none (use arrows)?

7. Sketch a cell that is in a hypertonic solution. Which way will the net movement of water be—into, out or none (use arrows)?

**Organic Compounds (Macromolecules)**

1. Name the four major groups of organic compounds and their monomers or subunits.

2. What is the function of each of the four major organic compounds in the body?

3. Which type of organic compound are enzymes?

4. What is activation energy? How does an enzyme affect the activation energy of a chemical reaction?

5. Are enzymes reusable?

6. Explain the lock and key model in regards to how enzymes work.

7. Name at least two ways that you can denature or change the active site where the enzyme is to bind?

8. What are the 3 environmental factors that affect enzyme efficiency?

8. What is the suffix that signifies an enzyme?

**Photosynthesis and Cellular Respiration**

1. Write the overall equation for **photosynthesis**. What are the reactants? Products?
2. The major organelle associated with photosynthesis is the c\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Write the overall equation for **cellular respiration**. What are the reactants? Products?
4. The major organelle associated with cellular respiration is the m\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. What molecule determines whether respiration is aerobic or anaerobic?
6. There are 3 steps of aerobic respiration: Glycolysis, Krebs Cycle, and the Electron Transport Chain. Which of these is the first step of **aerobic** respiration?
7. Where in the cell does glycolysis occur? Does it occur with oxygen or without oxygen present?
8. Where does the Krebs cycle occur? Did it occur with oxygen or without oxygen?
9. The 3rd stage of cellular respiration is called the (ETC) or the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. At the end of glycolysis, if there happens to be no oxygen available, then aerobic respiration cannot occur and instead \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will occur. \*\*Alcoholic fermentation can only occur in certain types of yeast cells. In alcoholic fermentation, pyruvic acid made at the end of glycolysis is converted into alcohol (ethanol)