**Biology Fall Final Exam Study Guide:**

**Unit 1: Nature of Science/ Experimental Design**

1. What is a scientific theory?

AN UNPROVEN FACT

1. What is a hypothesis? How should it be written?

AN EDUCATED GUESS OR PREDICTION SHOULD BE WRITTEN IN A WAY THAT ENABLES IT TO BE TESTED.

1. What should scientists do if their findings do not support their hypothesis?

TRY AGAIN OR DO MORE DATA

1. How many changing variables should a good experimental design have?

1

1. What is the independent variable?

THE VARIABLE THAT IS CHANGED

1. What does quantitatively mean?

THE AMOUNT, MEASURED USING NUMBERS

1. What does qualitative mean?

A DESCRIPTION

1. What is the dependent variable?

WHAT IS BEING MEASURED

1. What are constants?

THINGS THAT ARE NOT CHANGED IN AN EXPERIMENT

1. What is the control variable?

THE GROUP THAT DOES NOT GET TREATMENT

1. What are the characteristics of life?

ORGANIZATION, CELLS, GROWTH, RESPONDING, AND REPRODUCING

**Unit 2: Biochemistry**

1. What are the 3 subatomic particles of an atom?

PROTONS, NEUTRONS, AND ELECTRONS

1. What is an ionic bond? Give an example.

WHEN ELECTRONS ARE TRANSFERRED BETWEEN ATOMS. NaCl

1. What is a covalent bond? Give an example.

WHEN TWO ATOMS SHARE THEIR OUTER ELECTRONS.

1. What property allows water to be the universal solvent?

BECAUSE IT IS A POLAR MOLECULE.

1. Why is water a liquid at room temperature?
2. Why is water considered a polar molecule?
3. What is the pH scale?
4. What are hydroxide ions (OH-) and what type of solution has a higher concentration of them?
5. What are hydrogen ions (H+) and what type of solution has a higher concentration of them?
6. What makes a compound organic?
7. Does water give energy needed for bodily functions?
8. What is an element proteins have that carbohydrates and lipids do not have?
9. What do fats do better than carbohydrates (sugars)?
10. What organic group do starches and sugars belong to?
11. What do carbohydrates look like?
12. What do lipids (fats) look like?
13. What do proteins look like?
14. What do enzymes do for a chemical reaction?
15. Are enzymes depleted during a chemical reaction?

**Unit 3: The Cell**

1. What is the difference between Eukaryotes and Prokaryotes?
2. What groups belong to Prokaryotes?
3. What groups belong to Eukaryotes?
4. What does a prokaryotic cell look like?
5. What’s the difference between a bacterial cell and an animal cell
6. What are the 3 differences between a plant cell and an animal cell?
7. What organelle does photosynthesis happen in?
8. What organelle makes proteins?
9. What do lysosomes do?
10. What does the Golgi apparatus do?
11. What does the nucleus of a cell do?
12. What does hypertonic mean?
13. What does hypotonic mean?
14. What does isotonic mean?
15. What is facilitated diffusion?
16. What is simple diffusion? Give an example.
17. What does selectively permeable mean?
18. What is the movement of water called?
19. Draw the phases of mitosis in order.

**Unit 4: Photosynthesis and Cellular Respiration**

1. What are the two types of tissue in the roots of plants? What do they each carry?
2. Why would a leaf need to be flat?
3. What is the male reproductive part of the flower? What does it carry?
4. What is the female reproductive part of the flower? What does it hold?
5. Where does photosynthesis happen?
6. What is the chemical equation for photosynthesis? (Include sunlight)
7. What product of photosynthesis stores energy?
8. What is the purpose of cellular respiration?
9. What type of respiration do yeast do under anaerobic (no oxygen) conditions?
10. Where does cellular respiration happen?
11. What is the chemical equation for cellular respiration?
12. What are the reactants of the cellular respiration equation?
13. What are the products of the cellular respiration equation?

**Unit 5: Protein Synthesis**

1. What is the flow of information in protein synthesis?
2. What is DNA?
3. What is DNA replication? What are the base pair rules?
4. What is RNA?
5. How is DNA different from RNA?
6. What is a codon?
7. What is transcription? What are the base pair rules?
8. How many nitrogen bases does it take to code for 1 amino acid?
9. What is translation?
10. What is an amino acid?
11. What is a protein?