**Study Guide – Biology (Mid-term) Semester 1 Final Exam**

**Biochemistry Unit:**

\*What are the four major Biomolecules and what are their monomers?

\*What do the structural diagrams of the Biomolecules look like and what element composition do they have?

\*Why is water considered inorganic and what makes biomolecules organic?

\*What kind of biomolecule are Enzymes and what is their main function?

\* What do enzymes do with the activation energy needed for chemical reactions?

**Cells Unit:**

\*What is the difference between Prokaryotic cells and Eukaryotic cells? What are examples?

\*What are the levels of organizations of Eukaryotic cells from simple to complex?

\* What parts of the plant cell can be easily seen with a microscope? What organelle will be easily seen when they are green?

\*What do plant cells have that animal cells do not have?

**Cell Processes Unit:**

\*What are the parts of the cell membrane diagram?

\*What are 3 differences between Passive Transport and Active Transport?

\*What are 3 examples of Active Transport through the cell membrane?

\*What is Homeostasis and what part of the cell controls it?

\*What is Osmosis? Is it Active or Passive?

\*What makes a solution Hypotonic? Hypertonic? Isotonic?

\*What will happen to a cell in a Hypotonic solution? Hypertonic solution?
\*What is the chemical equation for Photosynthesis and for Cellular Respiration?

\*What are the parts of the Leaf diagram that displays Photosynthesis?

\*What are the parts of the chloroplast that displays the stages of Photosynthesis ?

\*What are the parts of the mitochondria that displays the stages of Respiration?

\*What is Anaerobic Respiration and what are 2 examples?

**Cell Cycle Unit:**

\*What are the 3 main stages of a cell cycle?

\*What will happen in the S phase of Interphase?

\*What are the 4 phases of Mitosis (in order) ? What do the diagrams look like in each phase in plant roots?

\*What will the daughter cells look like as a result of mitosis?

\*What is the difference between Plant cell cytokinesis and Animal Cell Cytokinesis?

\*What are the stages of Meiosis and what will it produce?

\*What is crossing over and when does it occur during Meiosis?

\*How can you compare the chromosome number of somatic body cells versus gamete cells?

**DNA/Protein Synthesis Unit:**

\*What is DNA used for?

\*What are the parts of a DNA diagram?

\*What is the shape of DNA?

\*What are the 4 bases of DNA and the 4 bases of RNA?

\*What will DNA replication produce?

\*What will Transcription produce?

\*What will Translation produce?

\*What are the 2 process for Protein synthesis? What organelle will be used to assemble proteins?

\*What are the parts of the Protein synthesis diagram?

\*What is the DNA complimentary strand for A, T, G, C? What would it be for RNA?

\*What are the groups of 3 bases on the mRNA called? On tRNA?

\*Why are tRNA’s needed for protein synthesis?

**Genetics Unit:**

\*What are the 3 Mendel Laws of Inheritance state?

\*What are alleles? What is the difference between Dominant alleles and Recessive alleles?

\*What are linked genes?

\*What chromosomes would have a sex-linked gene?

\*What is a Karyotype? What can it be used for?

\*What are the sex chromosomes for a male? Female?

\*What does a pedigree look like?

\* What is Incomplete dominance and 2 examples?

\*What is codominance and 3 examples?

\*What are the 4 blood types and their genotypes?

\*Be able to cross a monohybrid cross and identify the genotypes and phenotypes of the offspring.

\*Be able to cross a dihybrid cross (use “foil” to write out the gamete genes) and identify the genotypes and phenotypes of the offspring.

\*Be able to cross a sex-linked trait and blood types on a monohybrid cross.