**Biology GT Final Exam Study Guide**

General Information:

* This exam is a cumulative exam, covering content from 3rd and 4th quarter.
* There will be 50 multiple choice questions from the county
* In addition, there will be 10-15 open ended questions from me. This does not mean 10-15 essay questions; it just means 10-15 questions that are not multiple choice.
  + No fill in the blank ☺
  + Expect problems, diagrams, and responses about 4 sentences in length
* Study vocabulary, class notes, old homework assignments/readings, and old tests
  + Answer keys for old tests will be posted online
  + Quizlet links are all still online; flashcards for evolution and ecology will be up ASAP
* Stay tuned for specific dates and times of after-school review sessions
* As always, let me know if there is anything I can help you with/clarify for you (Sooner is better than later! Don’t ask me what DNA is the day before your exam!)
* To determine your final course grade, Wilde Lake High School adheres to the following Howard County guidelines:
  + Each letter grade is assigned a point value as follows:  
    A = 4, B = 3, C = 2, D = 1, E = 0
  + Add up your grades from each quarter. For example, suppose you earned an A 1st quarter, a B 2nd quarter, a B 3rd quarter, and a C 4th quarter. Your total would be 4 + 3 + 3 + 2 = 12
  + Multiply that value by 2—in our example, we now have 24
  + Add your exam scores. If our example student earned an A on Exam 1 and a C on Exam 2, the total is now 30.
  + Divide that number by 10 to find your course grade. Our example student has a course grade of 3, which is a B.

Vocabulary

Chromosome

Cytosine

Gene

Thymine

Histone

Guanine

Nucleosome

Adenine

Autosome

Nucleotide

Sex chromosome

Double helix

Homologous pair

Karyotype

Diploid

Fertilization

Haploid

Gamete

Semi-conservative replication

DNA polymerase

Interphase

S Phase

M Phase

Mitosis

Prophase

Metaphase

Anaphase

Telophase

Cytokinesis

Meiosis

Crossing over

Independent Assortment

Nondisjunction

Trisomy

Prophase I

Metaphase I

Anaphase I

Telophase I

Prophase II

Metaphase II

Anaphase II

Telophase II

Haploid

Diploid

Replicated chromosome

Centromere

Chromatid

Homologous pair

Centriole

Spindle fibers

Metaphase plate

Cell plate

Gamete

Somatic cell

Spermatocyte

Oocyte

Asexual reproduction

Binary fission

Zygote

Transcription

Translation

mRNA

tRNA

Ribosome

Codon

Anticodon

Splicing

Introns

Exons

RNA polymerase

Polypeptide

Template strand

rRNA

Mutation

Silent mutation

Missense mutation

Heredity/inheritance

Expression

Allele

Genotype

Phenotype

Homozygous

Heterozygous

Recessive

Dominant

P generation

F1 generation

F2 generation

Self-fertilization

Genotypic ratio

Phenotypic ratio

Adaptation

Cladogram/phylogenetic tree

Homologous structure

Analogous structure

Common ancestry

Natural selection

Fitness

Selective pressure

Variation

Allele frequency

Evolution

Ecology

Population

Community

Ecosystem

Niche

Biotic

Abiotic

Predator

Prey

Competition

Symbiosis

Mutualism

Commensalism

Parasitism

Carnivore

Herbivore

Omnivore

Food chain

Food web

Trophic level

Producer

Consumer

Autotroph

Heterotroph

Primary consumer

Secondary consumer

Tertiary consumer

Sink/reservoir

Source

Nitrification

Denitrification

Limiting resource

Carrying capacity

Ecological succession

Pioneer species

Colonization

Climax community

Stuff you should know/be able to do

* Describe the relationship between gene, chromosomes, and DNA
* Diagram a single nucleotide
* Diagram DNA
* Given a length of DNA sequence, provide the complementary sequence
* Know the difference between a gamete and a somatic cell (haploid vs diploid)
* Know how many chromosomes humans have
* Describe mitosis and understand the purpose of mitosis
* Describe meiosis and understand the purpose of meiosis
* Compare/contrast mitosis and meiosis
* Compare and contrast DNA and RNA in terms of both structure and function
* Given a length of DNA sequence, provide the appropriate mRNA sequence
* Given mRNA codons and a codon chart, translate into a polypeptide
* Describe the process of translation, including the roles of tRNA and the ribosome
* Understand “DNA 🡪 RNA 🡪 Protein”
* Be able to read a pedigree
* Be able to solve heredity problems (find genotypes, phenotypes, and ratios) that involve complete dominance, sex-linked traits, multiple alleles, and multiple traits
* Be able to identify possible gametes of parents for linked traits
* Be able to read a phylogenetic tree to determine most recent common ancestors between two groups
* Given organisms and characteristics, be able to draw a phylogenetic tree
* Identify multiple lines of evidence for evolution
* Identify adaptations
* Identify selective pressures
* Make predictions about how natural selection will affect a population
* Calculate allele frequency
* Make determinations about whether natural selection/evolution is occurring in a population
* Read a food web
* Identify an organism’s trophic level
* Explain the 10% Rule
* Identify and describe the different categories of species interactions
* Define the levels of ecological organization
* Describe the relationship between niche, adaptation, competition, and biodiversity
* Identify a limiting resource for a population
* Interpret population graphs in an ecosystem and make predictions about how changes in an ecosystem would affect those populations
* Identify the probable sequence of plant communities in ecological succession
* Given diagrams, be able to answer questions about the water cycle/carbon cycle/nitrogen cycle