WLHS/Biology/Oppelt

2nd Semester Final Review for Biology

You will be allowed an 8 x 11 sheet of paper to put your notes on. Your cheat sheet must be ****HANDWRITTEN****. If it is not handwritten, the cheat sheet will be ripped up on the spot. I will be checking these before the final exam and you will be turning them in when you are finished with your exam. Again, the areas below are main concepts (*but not limited to*) I would like you to know and understand for the final. Be able to *apply* these to situations or scenarios, *not just memorize*.

FYI: A few recommendations for studying:
1. **Start studying NOW!**
2. Review all lecture notes and book readings.
3. Answer the questions at the end of EACH section AND chapter.
4. Study with a friend (not just socialize) and quiz each other.
5. Look over old study guides.
6. Flashcards
7. Rewriting (hand written or typed) lecture notes (this is how I used to study and it helped me a lot)
8. Reading notes aloud to yourself or to a friend.
9. Make yourself a test and take it. Also trade with a friend!

Genetics and Genetic Engineering (Chapters 11, 14, and 15)

Describe the work of Mendel and how it changed our concept of inheritance.

Describe Mendel's laws and their importance.

Describe the stages in Meiosis and be able to identify each stage.

What is crossing over? Why is it important?

What are the results in mistakes of meisosis?

What is the difference between Mitosis and Meiosis?

Describe the difference between phenotype and genotype.

Describe the difference between homozygous and heterozygous. Also know the other words for the terms. Be able to identify them in word problem.

What is a Punnett Square? How do you construct a Punnett Square?

What is a monohybrid cross versus a dihybrid cross? Be able to do problems for both of these.

Describe codominance and incomplete dominance. Be able to use these to solve in crosses.

What are multiple alleles? Give examples. Be able to do a cross with alleles.

Describe the differences between autosomes and sex chromosomes. How many of each in a diploid cell? How many of each are in a haploid cell?

Describe sex-linked traits and be able to use them to solve crosses.

What are pedigrees and how are they used to determine genetic conditions in families?

Be able to interpret a pedigree. Review the symbols in a pedigree.

What is a carrier?

What is a polygenic trait? Give an example.

What are homologous pairs?

What is a tetrad?

What is karyotyping? What are some uses for this technique?

How are sex-linked traits and sex-influenced traits different?

Identify some influences on gene expression.

Evolution (Chapters 16, 17, and 19)

Describe the earth in geological times and relate this information to evolution.

How are fossils formed? What information do they provide for earth's history and evolution?

Identify ways organisms are preserved.

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What is the difference between relative dating and absolute dating? Give examples.

What is a half-life? Be able to calculate a half-life of an object.

Describe the scientists involved in evolution. What were their contributions to the theory of evolution?

Compare Darwin and Lamarck's theory of evolution.

Describe Darwin's 5 lines of natural selection and use a single trait as an example (e.g. zebra stripes).

Describe the 5 pieces of evidence for evolution.

What are variations and adaptations? Give examples.

Describe 3 types of adaptations.

What is fitness?

Describe the difference between convergent and divergent (adaptive radiation) evolution

Describe the 3 types of selection (disruptive, directional, and stabilizing) and how they apply to evolution

Describe the 3 types of isolation (geographical, behavioral, and temporal) and how they apply to evolution and how species are formed. Define speciation.

What is the difference between homologous and analogous structures?

What is a vestigial organ?

What is genetic drift? How does it relate to evolution?

Describe the Founders Effect.

Compare gradualism, equilibrium, and punctuated equilibrium.

Bacteria , Viruses, and Infectious Diseases (Chapter 20 and Chapter 35)

Describe what a virus is and what it looks like (structure, shapes, etc…).

Is a virus alive? Why or why not?

What is a retrovirus? Give an example.

Describe the lytic cycle. When does it end?

Describe the lysogenic cycle. When does it end?

What are bacteria? How are they different from viruses?

What is the difference between anaerobic and aerobic respiration?

How do bacteria reproduce?

In what ways are bacteria used? Give examples.

How can bacteria affect other organisms (both good and bad)?

What is a pathogen? Give examples.

How are pathogens spread to other humans?

What is the difference between specific and nonspecific defenses? (Give examples)

What is an antigen? What is an antibody?

Describe the job of T cells and B cells. When do each of these cells during an infection?

Compare the primary immune response to the secondary immune response.

Compare active immunity to passive immunity.

What is a vaccine? How does it work?

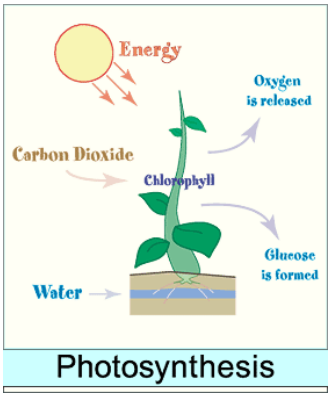
How do we prevent infectious diseases from spreading?

Why are we seeing a reemergence of diseases?

What are allergies?

Describe what autoimmunity is? Give an example of an autoimmune disorder.

Chapter 8 and 9: Photosynthesis and Cellular Respiration (Chapter 8 and 9)



What is the difference between ATP and ADP? Which has more energy?

Where is energy stored/released?

What is photosynthesis? What is the main product?

What is an electron transport chain? How does it work?

Where do the light and dark reactions occur? (what specific part of the chloroplast)

What are the reactants/products of the light-dependent (light) and light-independent (dark) reactions?

What is cellular respiration? What are the steps involved? What is the main product?

How many ATPs come from Glycolysis and the Krebs Cycle?

What specific parts of the cell do glyocolysis and the Krebs Cycle occurs?

Know the equations for Photosynthesis and Cellular Respiration

Lactic Acid Fermentation vs. Alcohol Fermentation

Ecology (Chapter 3)

What is considered part of the biosphere?

Define and give examples of biotic and abiotic factors.

Describe how energy flows.

What are producers, primary consumers, secondary consumers, and tertiary consumers.

What are autotrophs and heterotrophs? Give examples.

What is ecological hierarchy?

What factors determine ecological hierarchy?

Describe the water cycle using the six steps.

Describe the carbon cycle. Identify how plants and animals get carbon and release carbon.

Describe the nitrogen cycle. Identify where nitrogen fixation, denitrification, and assimilation occur.

Biomes and Communities (Chapter 4)

What is the difference between weather and climate?

What factors affect climate?

What is a habitat? What is a niche?

Can two of the same occupy the same niche and the same time? Explain why or why not.

Describe the 3 examples of symbiosis.

What is predation? Competition?

Describe the difference between primary succession and secondary succession. Give examples.

What are limiting factors? Give examples.

What is a climax community?

What are pioneer species? What stage of succession would you expect to find these in?

Define biome.

What are the 2 aquatic biomes? Describe characteristics of each.

Compare photic and aphotic zones.

Define the range of tolerance.

What are estuaries? Where would you find these?

What are the 6 terrestrial biomes? Describe the key characteristics of each.

What are tides?

What is an intertidal zone? What influences its size?

Population Dynamics (Chapter 5)

What 4 factors describe a population in nature?

What is a population?

What 3 factors determine how population grows?

What is the difference between exponential and logistic growth?

How do you calculate the change in population size? Be able to calculate this (see Population Parameters worksheet and lecture notes for examples).

Why can't natural populations continue to exponentially grow for too long?

What is carrying capacity? What determines carrying capacity?

What factors control population growth?

What is density?

What is the difference between density dependent and density independent factors?

What is demography?

Biological Diversity and Conservation (Chapter 6)

What is the relationship between resource and sustainable development?

What is biodiversity and what is its importance?

What is extinction?

What makes an organism "threatened" vs. "endangered" ?

What are ecological hot spots?

Identify the 8 factors that threaten biodiversity.

Describe some strategies that are used in conservation.

What is a habitat corridor?

How do reintroduction programs work?