Study Guide Exam 4

**Urinary System**

1. A. Describe the broader concept of "excretion" in your own words. B. Why is this process necessary for the body? C. Name some parts of the body that can be used for excretion.

2. A. Name the major structures of the urinary system as learned in class and describe their functions. C. Draw a simplified version of the urinary system and label the parts.

3. Name the parts of the kidney (cortex, medulla, pyramids, collecting ducts, ureters) and describe the purpose/function of each.

4. A. What is a nephron and what does it do overall? B. Name the parts of the nephron as described in class (bowman’s capsule, glomerulus, loop of henle, capillaries, collecting tubules). C. Name and describe the three main steps of urine production where along the nephron each takes place. What is the fourth “step”? D. Draw a simplified nephron (and blood supply) and label the parts.

5. Describe the following diseases of the urinary system: A. Urinary Tract Infections B. Kidney stones

6. A. Describe the parasite *Schistosoma heamatobium* A. How is this infection acquired? C. What are some of the effects of infection with this organism? D. What is Pharoah's Curse?

**Heredity**

1. Define the following terms, give examples to help explain your answer A. gene, B. allele, c. dominant allele, D. recessive allele, E. genotype, F. homozygous dominant, G. homozygous recessive, H. heterozygous/hybrid I. phenotype

2. A. Who was Gregor Mendel? B. What organism did he use in his study? C. What is meant by Mendelian Inheritance?

3. A. When doing a punnett square, what do the letters outside of the box represent and where do they come from (be specific)? B. If a parent is homozygous dominant for a trait, how many different kinds of gametes can (s)he make? Give an example C. If a parent is homozygous recessive? Example? D. If the parent is heterozygous? Example? E. What do the letters inside the box represent (be specific)?

4. Show a monohybrid cross using the following information. 
   L = long wings, l = short wings Show the punnett square and give the genotypic and phenotypic outcomes of the offspring.

5. Explain Mendel's principle of segregation: to help illustrate your point give an example.


7. A. Distinguish between complete dominance, co-dominance and incomplete dominance.

10. A. What is meant by multiple alleles? B. give an example C. If a man of blood type B and a
woman of blood type A have children show (by punnett square) how they could have children of all blood phenotypes (A, B, AB and 0)

10. A. What is meant by Polygenic Inheritance? B. Give an example of a human trait that is governed by polygenic inheritance.

11. A. what are sex-linked traits? B. What are X-linked traits? Give some examples. C. which sex is generally affected at a greater percentage? D. If a colorblind male marries a carrier female what are the chances that their children will be color-blind?

12. A. What is meant by an "autosomal recessive"? B. give some examples of autosomal recessive diseases. E. What is meant by an "autosomal dominant"? D. give some examples of autosomal dominant diseases.

**Lymphatic & Immune Systems**

1. A. What are the three major functions of the lymphatic system? B. What other systems does the lymphatic system interact with directly? How?

2. A. Describe the functions of each of the following structures: Lymph vessels, lymph nodes, lacteals, spleen, bone marrow, thymus gland.

3. A. What is the relationship between the lymphatic system and cancer? B. What are the pathologies involved with lymphatic filariasis? What causes lymphatic filariasis?

4. A. What are four kinds of non-specific defenses we have against invaders? Describe how each functions to defend the body. B. Describe the functions of each of the following components of the non-specific defenses: skin, mucous, lysozyme, bile, cilia, sebum, inflammation, histamine, macrophages, complement.

5. A. Describe the functions of each of the following components of the specific defenses: antigens, antibodies, B-lymphocytes, T-lymphocytes, perforin.

**Parasites**

1. Define each of the following terms: symbiosis, parasitism, mutualism, host, vector, reservoir. Give an example for each using the parasites we studied in class.

2. For each of the three general groups of parasites (protozoans, helminths, ectoparasites), describe their main characteristics and give an example for each.

3. Be able to recognize names of the three protozoan parasites discussed in class. For each describe its method of infection/vector and outstanding characteristics (i.e.pathologies/associated diseases or special needs). *Trypanosomes, Plasmodium, Entamoeba.*

4. What are the three main groups of helminths? Be able to recognize the names the four helminths discussed in class. For each describe the methods of infection/vector and any special information about the parasite.
5. Describe the primary characteristics of the ectoparasites discussed in class and give an example of one along with its mode of transmission and associated pathologies.

**Human Evolution**

1. Define the term evolution in your own words. B. Describe the mechanism of evolution (natural selection). Make up an example of an animal evolving in terms of one specific characteristic and describe how natural selection works to allow evolution to occur.

2. What are the five observations that led to Darwin’s Theory of Evolution?

3. What is artificial selection and how is it different from natural selection?

4. What are the main lines of evidence for evolution?

5. What are prosimians and anthropoids? How do monkeys, apes and humans fit into these classifications? Draw a diagram.


7. What is the Out of Africa Hypothesis? What is the Multiregional Hypothesis? Explain why one is favored over the other by mainstream anthropologists.

**Additional study for Final exam:**

In addition to the recent material, please review your previous study guides for material that may show up on the cumulative portion of the final. As I told you in class, the cumulative questions will be general in nature and will focus on “big picture” concepts learned throughout the quarter. For example, don’t re-study the names of all of the parts of a neuron or all the kinds of STD’s. However, you should still understand how diffusion/osmosis works…how enzymes work and generally how the respiratory system works in conjunction with the circulatory system to bring oxygen to tissues and remove waste. This is not a complete list obviously, but hopefully will give you an idea of the depth you need to study for the cumulative portion of the exam. Good luck to all of you!!