**U.C.S. Model Based Biology Final Exam Review 2018/2019**

**Sexual Selection (2)**

1. How can we explain the presence of traits that clearly give the organism a disadvantage for survival?
2. What is sexual selection?

**Feedback Loops (3)**

1. How does the body continue to function under different circumstances (exercise, extreme heat or cold)?
2. What role do sensors, processors and effectors play in feedback loops?
3. How does the body regulate temperature to maintain homeostasis? (Include: body temperature changes, job of sensors)

**Matter & Energy (7)**

1. How do organisms get the stuff they need to survive from their environment?
2. Describe the carbon cycle. (steps and importance to biology)
3. Describe the nitrogen cycle. (steps and importance to biology)
4. What is the role of nitrogen fixing bacteria?
5. What are producers and consumers?
6. What is a trophic level?
7. Describe the energy transfer between trophic levels.
8. Describe the amount of energy available to each trophic level. (energy pyramids)
9. What is a herbivore?

**Meiosis (11)**

1. Why do siblings sometimes look so much alike and other times so different? How is parental DNA distributed to offspring?
2. What is independent assortment? When does it happen and what is the significance of this event?
3. What are homologous chromosomes?
4. What is crossing over? When does it happen and what is the significance of this event?
5. What is a karyotype? Be able to analyze a karyotype.
6. What is the difference between diploid and haploid cells? Give examples of each.
7. How do chromosomes get passed from parents to offspring?

**Genetics (9)**

1. How are traits determined and passed from parents to offspring? How can we explain these different patterns of inheritance?
2. What is genotype?
3. What is phenotype?
4. Describe the inheritance of a sex-linked trait.
5. What is a pedigree? Be able to recognice the inheritance pattern of a trait using a pedigree. (dominant, recessive, sex-linked)
6. Be able to perform monohybrid crosses and determine the probability of various genotypes and phenotypes. (ratios)

**DNA (11)**

1. What is the connection between DNA and protein?
2. What is the connection between DNA and traits?
3. What is the role of DNA?

1. Describe the structure of DNA.
2. What does complimentary strand/base pair mean?
3. Can you use a DNA codon chart for translation?
4. What is a mutation?
5. What causes a mutation?
6. What is the result of a mutation?
7. How does Natural Selection act on a mutation?
8. How/when will a mutation be passed onto the next generation?

**Growth & Development (5)**

1. How are the cells in a multicellular organism organized?
2. Describe the steps in the cell cycle.
3. What is the result/purpose of mitosis?
4. What is gastrulation? How is it related to cell specialization?

**Speciation (5)**

1. How is a species defined?
2. What are the “steps” in the formation of a new species?
3. Give examples of types of isolation.
4. Describe the types of selection that can act on a population. (directional, stabilizing and disruptive)