Semester I Exam Review

Your semester one exam is scheduled to take place on Wednesday, 18 January from 9:15 to 10:15. The detailed schedule will be posted in the next few days. It is your responsibility to check the posted schedules to determine in what room your section will be taking this exam and to be there on time ready to take the exam. Read the school policy for making up this exam if you are absent. There are severe penalties for an unexcused absence from this exam or failing to make prompt arrangements for a make-up. Do not miss this exam!

This exam will cover material from chapters 1 to 5. You can expect to see a variety of questions including fill in, multiple choice, odd word out, and short answer questions. There will also be data and diagrams that you will need to interpret. The following information is intended to give you some idea of the most important material you should concentrate on as you prepare for this exam. It is not intended to be a complete or comprehensive list of every point covered on the semester exam. You should also use your chapter tests, chapter syllabi, and homework assignments as study guides. Don't forget your lab work. Information from these labs may be incorporated in to the semester exam. In addition, you should be prepared to answer questions on the content and concepts covered in the outside readings you have done this semester.

The types of questions of your semester exam are:

- Part I: True and False, 15 questions worth one point each
- Part II: Odd Word Out, 15 questions worth one point each
- Part III: Multiple Choice, 15 questions worth one point each
- Part IV: Diagram Questions: 15 questions worth one point each.
- Part V: Short Answer Questions, 4 questions worth five points each.
- Part VI: Scientific Method Questions, 5 questions worth four points each.

Chapter 1, The Science OF Biology.

- Understand the function and the steps of the Scientific Method.
- Distinguish among the terms hypothesis, theory, and natural law.
- Be able to identify independent (or manipulated) and dependent (or responding) variables of an experiment. Understand the importance of control groups.
- Understand what "Biology" is and be able to list and explain the characteristics of life.
- Be able to explain how biology can be studied at various levels and give examples.
- Be able to use and identify the correct SI units used in Biology and be able to construct and interpret tables, line graphs, and bar graphs.

Chapter 2, The Chemistry Of Life.

- Recall your basic chemistry from Physical Science including the concepts of the atom, elements, compounds, atomic number and mass, isotopes, ionic covalent, polar, and hydrogen bonds.
- Know what an organic molecule is and the relationship between monomers and polymers.
- Be able to recognize the molecular structure of carbohydrates, lipids, amino acids, proteins, and nucleotides.
- Be able to give examples of these macromolecules, their functions, and characteristics
- Understand the differences between exothermic and endothermic reactions and the role of protein enzymes in these reactions in the cell.

Chapter 3, The Biosphere.

- Be able to define the study of "Ecology."
- Understand the various levels of ecological studies including the biosphere, ecosystems, communities, populations, and species. Be able to give examples of each.
- Be able to explain and describe the flow of energy through an ecosystem. In particular understand the role of autotrophs and heterotrophs, cell respiration, and photosynthesis. Be able to relate them flow of energy through an ecosystem to the laws of thermodynamics.
- Be able to describe the details of biogeochemical cycles including the water cycle, carbon cycle, and the nitrogen cycle. In particular know the role of biotic and abiotic elements in the biosphere that play a role in these cycles.
- Know how limiting nutrients function to determine the characteristics of an ecosystem.

Chapter 4, Ecosystems And Communities.

- Be able to describe the role of climate in the distribution of major climatic zones and the role of wind and ocean currents in the distribution of heat energy around the globe.
- Explain the difference between abiotic and biotic factors in an ecosystem. Be able to explain the concept of an ecological niche and the principle of competitive exclusion.
- Be able to name and describe the various types of symbiotic relationships studies in class including mutualism, commensalisms, predation, and parasitism.
- Understand the terms ecological succession and the difference between primary and secondary succession. Be able to describe examples of each.
- Understand the concept of a biome and be able to recognize major terrestrial and aquatic biomes

Chapter 5, Populations.

- Understand what a population is and the characteristics of all populations.
- Be able to name and describe the factors that contribute to the growth rate of a population.
- Be able to explain the difference between exponential and logistic population growth and the role of limiting factors in determining the carrying capacity.
- Distinguish between density dependent and density independent factors that control population growth and be able to describe examples of each.
- Be able to interpret age structure diagrams of human populations.