

# Sample essay on bio 110 midterm examination

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## **Essay Examination**

Living things have distinct characteristics that differentiate them from non-living things. They respond to variations in environmental conditions for instance decrease or increase in temperature. A living thing is able to detect the changes in the environment and react in a manner that can help it maintain the normal external and internal conditions. For example, most living animals move away from high temperatures. Plants too, respond to the saline environment by excluding sodium and chloride ions. Living things also respire. As a result they take in oxygen and gives out carbon dioxides. Moreover, living things acquire nutrients and energy from the environment. These characteristics can enable a biologist to identify living things within three days. An atom changes to an ion when it gains or losses electron. An ion is a charged particle of the same element. An atom becomes a new element when gain or gives out proton. For example, when sodium gains one proton it becomes the magnesium. On the other hand, when sodium loses one proton it becomes Neon. An atom becomes an isotope of the same element when it gains or losses a neutron. For example, hydrogen becomes Deuterium when it loses one neutron. On the other hand, hydrogen becomes Tritium when it gains one neutron. Both Deuterium and Tritium are isotopes of hydrogen. Both molecules of peptides and disaccharides are synthesized through a chemical reaction called dehydration synthesis. This reaction falls under condensation reaction because water is given away during the reaction process. It involves the removal of hydrogen from one monomer and the hydroxyl group from the other monomer. The hydrogen and hydroxyl group are combined to give water. The resulting monomers are joined by

covalent bonds to form disaccharides and peptide. These monomers can be amino acids, or lipids. Many monomers can be joined together to form complex polymers for instance polysaccharides. An example of a polysaccharide is glycogen. The nucleus control cell activities. Consequently, it can be compared to mayor's office where all the activities of the city are coordinated. Mitochondria help in the breakdown of glucose to release energy. Mitochondria can be compared to city power generators that produce electricity for use by city residents. Cell membrane regulates the entry and exit of materials into the cell. It can be compared to city airport where visitors entering and leaving the city are screened. Vacuoles are the food and water storage sites in the cell. They can be compared to city stores such as supermarkets. Lysosomes, on the other hand, can be compared to city garbage collection trucks. Enzymes speed up the rate of metabolic processes such as digestion of proteins and carbohydrates. These biological catalysts are made of protein and acts on specific substrates. For instance, amylase and lipase act on carbohydrates and lipids respectively. Enzymes ensure that the energy is available to the body within the time possible because they increase the rate of metabolic reactions. For instance, lactase catalyzes the conversation of lactose to glucose. Glucose supplies energy to the body. Photosynthesis and respiration are complementary processes because they use the products produced by each process. Respiration is the process that involves oxidation (burning) of sugars to produce energy. During respiration, oxygen is taken into the body cells while carbon dioxide is given out. This carbon dioxide is used by plants in the presence of sunlight to produce glucose. The process is called photosynthesis. During photosynthesis, oxygen is given out.