

"MY MIND IS A BLANK" SBI3U1 EXAM REVIEW

The following includes major topics from the CELLULAR FUNCTIONS STRAND to consider for the SBI3U1 exam. It does not cover everything on the exam and might cover material that is not guaranteed to be on the exam. Use with discretion.

The _____ is the fundamental building block of all living things. All cells come from _____. Prokaryotic cells (eg. _____) lack a membrane-bound _____ unlike _____ cells. All cells contain a cell _____ which controls entry and exit of materials for the entire cell. The major building block of the cell membrane is the _____ molecule. This molecule has a hydro _____ phosphate head group that faces the _____ and _____ (liquid environment). Two _____ tails which are hydro _____ face each other. Thus, the membrane is called a lipid _____. Various proteins stud the membrane. Among these are _____ proteins which bind hormones and other molecules and _____ proteins which control passage through the membrane.

Inside a cell are various _____ (ie. mitochondria, ribosomes). The role of the mitochondria is to produce lots of _____. Ribosomes, which are made in the _____, often attach to the E.R. or are found floating freely in the _____. Ribosomes produce _____ which are then transported through the E.R. to the _____ where they are packaged into sacs called _____ and then released from the cell by the process of _____. Many other organelles are present in the cell including _____ which make hydrolytic enzymes, _____ which store water, ions, etc., and _____ which produce spindle fibres for mitosis and meiosis.

Most cells can be seen with a light microscope. The microscope has an _____ lens (what you look through), and 3 _____ lenses which magnify a specimen by ____ X, ____ X, or ____ X. The total magnification of a microscope = _____ x _____. The amount of light passing through the specimen can be controlled using the _____. The area of light that you see is called the diameter of _____ (or dFOV). If you know the dFOV, you can calculate the actual size of a specimen using the equation: Actual Size = _____ / _____.

Cells require a constant input of energy to survive. Cellular energy comes in the form of a molecule called adenosine _____ (or ATP). Cellular _____ includes all the rxns needed to make ATP. The first step in the breakdown of glucose (the main energy supply) is called _____ and occurs in the cytoplasm of the cell. It makes _____ ATP. At the end of glycolysis, 2 molecules of _____ enter the mitochondrion and move into the liquid interior called the _____. Here, the second step of cellular resp. occurs which is called the _____ cycle. This makes another _____ ATP. Finally, the third step occurs on the folds of the inner membrane of the mitochondrion called the _____. This step produces _____ ATP. A total of _____ ATP are produced during the breakdown of one glucose molecule. Only _____ (1, 2 or 3?) steps of cellular resp. require oxygen and are thus called _____ processes.

If glucose is plentiful in the body, it can be stored as _____ in the liver and _____. Because this molecule contains many glucoses, it is called a _____ saccharide. A single glucose or fructose molecule is called a _____ saccharide, whereas two single sugars bonded together is called a _____ saccharide. The joining of sugars or amino acids or other small molecules occurs in a chemical rxn called a _____ synthesis rxn. If two glucoses bond, _____ is produced. If one glucose and one fructose bond, _____ is produced. Proteins can also be formed when many _____ bond. Triglycerides (lipids) can be formed when one _____ and three _____ bond. DNA or RNA can be formed when many _____ bond. All of these molecules have structural or functional roles in the body.

To get the glucose or amino acids or other into the cell, they must go through a transport process. If moving down the concentration gradient (from _____ to _____ conc.), oxygen enters a cell by _____, glucose enters a cell by _____, and large substances (like whole bacteria) enter a cell by _____. These processes don't require energy and are considered to be forms of _____ transport. If energy (ATP) is required, the substance moves _____ the conc. gradient. An example is the Na⁺/_____ pump which moves 3 _____ ions out of a cell and simultaneously moves 2 _____ ions into a cell.