7.013 Sp 05 First Section Self-quiz Solutions

1) and 2)

a) **golgi apparatus** - stores, modifies, and packages proteins.

b) **rough endoplasmic reticulum** - synthesis and sequestration of proteins that function outside the cytosol.

c) **mitochondrion** - energy transformation - cell "power plant" - ATP synthesis.

d) **smooth ER** - lipid synthesis, chemical modification of proteins.

e) **lysosome** - a membrane-bound vesicle with hydrolyzing and digesting enzymes.

f) **nucleus** - contains cellular DNA - stores most of the cell's information.

g) **ribosomes on the rough endoplasmic reticulum** - protein synthesis.

h) **nucleolus** - a spherical body found within the nucleus, where ribosomal RNA is synthesized.

i) **plasma membrane** - separates the cell from the environment, regulates traffic of materials in and out of cell.

3 a) i) **plasma membrane**

   ii) **endoplasmic reticulum**

   iii) **Golgi apparatus**

   iv) **ribosomes on the rough endoplasmic reticulum**

   v) **cytoplasm**

   vi) **free ribosomes**

   vii) **smooth ER**

   viii) **mitochondrion**

   ix) **Nucleus**
3 b) How do prokaryotic cells differ from eukaryotic cells? **Prokaryotic cells do not have a nucleus nor organelles like mitochondria, ER, and Golgi apparatus.**

4) Currently, scientist estimate that life first appeared on approximately 4 billion years ago.

5) A key point in the theory of evolution is: slight variations among individuals significantly affect the chance that a given individual will survive in its environment and reproduce. These variations among individuals are due to **mutations**.

6) Surface tension occurs in water because it has **hydrogen bonds**.

7) The building blocks of DNA are **nucleotides**.

8) The building blocks of proteins are **amino acids**.

9) All cells have a membrane composed of **phospholipids**.

10) In the process of glycolysis, cells make energy in the form of **ATP**.

11) Oxidation and **reduction** occur together.

12) What is a gene? A **segment of DNA that directs the production of a protein or RNA molecule**.

13) The "Central Dogma" states that information flow in the cell is from DNA to **RNA to protein**.

14) Are the genes in your eye cells the same as the genes in your gut cells? The genes in the two are the same.

15) Are the proteins in your eye cells the same as the proteins in your gut cells? The proteins in the two are different.