

Quiz 2
BI-102-2, Fall '07, Dr. C. S. Tritt

Each question was graded on a 10 point scale and the total divided by 0.8 to put it on a 100 point basis.

1. Describe the biochemical process of hydrolysis.

Hydrolysis is the breaking of a covalent bond between 2 organic molecules by the addition of water. Covalent and organic were not required. Not always the breakdown of proteins into amino acids. Not saying break a bond was -4 or more. Describing condensation (or dehydration) was -7.

2. To what does the “primary structure” of a protein refer?

It's sequence of amino acids. In general the primary structure dictates all the higher ordered structures, but this was not a required part of the answer. Not saying sequence (or order) was -3 or more.

3. Sketch (or describe) the overall structure of phospholipids in schematic form.

See Figure 3.29 (Just drawing O=== was -5 or more if you said something else wrong).

Choline or other charged organic molecule

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Phosphate (or PO₄)

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Glycerol (a.k.a. glycerin)

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Fatty Acid 1 Fatty Acid 2

4. Briefly describe an important way (other than their physical size and DNA structure) in which prokaryotic and eukaryotic cells differ.

Any of the following (Just saying prokaryotes are simpler was too general and -5):

Prokaryotic cells don't contain membrane bound organelles (like a nucleus in particular) or compartments while eukaryotic cells do.

Prokaryotic cells don't reproduce sexually, eukaryotic cells generally can and often do.

5. Name a type of cell (kingdom, domain or cell architecture) that typically does not have a wall.

Kingdom Animal (Kingdom not required, domain and cell architecture would only apply to the opposite question (What types of cells have walls?). Long correct answers accepted for full credit even if they didn't directly answer the question asked, which I agree was a bit confusing.

6. What is the primary function of mitochondria?

Accepted: Cellular "power plants;" sites of oxidative metabolism; convert chemical energy into more a readily available form (ATP); and even just "make ATP." I also accepted "Make ATP out of sugar" but they really "use the energy from the oxidation of molecules derived from sugar and other sources to make ATP out of ADP and P_i ."

7. Describe what happens when a cell having aquaporins is placed in a hypertonic solution.

Water is drawn from the cell or the cell shrinks. Getting it backwards was -5.

8. Name or briefly describe 2 attributes of facilitated permeation (called facilitated diffusion in your textbook).

Any 2 of: It is specific, it is passive and it saturates. Three points given for "involves a membrane" even though it was not one of the attributes listed in the book. Three points given for channel and carrier proteins although these are mechanisms, not attributes.