**Midterm Exam Formative Assessment**

1. The organelle that is the major producer of ATP and is found in both heterotrophs and autotrophs is the
	1. chloroplast
	2. nucleus
	3. ribosome
	4. mitochondrion
2. The nucleolus functions in the production of…
	1. Golgi apparatus
	2. mitochondria
	3. ribosomes
	4. endoplasmic reticulum
3. A covalent chemical bond is one in which
	1. electrons are removed from one atom and transferred to another atom so that the two atoms become oppositely charged.
	2. protons and neutrons are shared by two atoms so as to satisfy the requirements of both atoms.
	3. outer-shell electrons of two atoms are shared so as to satisfactorily fill the outer electron shells of both atoms.
	4. outer-shell electrons of one atom are transferred to the inner electron shells of another atom.
4. If the pH of a solution is increased from pH 5 to pH 7, it means that the
	1. concentration of H+ is 2 times greater than what it was at pH 5
	2. concentration of H+ is 2 times less than what it was at pH 5
	3. concentration of OH- is 100 times greater than what it was at pH 5
	4. concentration of OH- is 100 times less than what it was at pH 5
5. What property of water is responsible for water transport in plants?
	1. Cohesion
	2. Its versatility as a solvent
	3. Insulation
	4. Moderation of temperature



**Figure 4.3**

1. The two molecules shown in Figure 4.3 are best described as
	1. Enantiomers
	2. Geometric isomers
	3. Structural isomers
	4. Nonisotopic isomers



**Figure 4.11**

1. Which functional group is *not* present in the molecule shown in Figure 4.11?
	1. Carboxyl
	2. Sulfhydryl
	3. Hydroxyl
	4. amino
2. All of the following distinguish plant cells from animal cells except
	1. Plant cells have a large central vacuole; animal cells do not
	2. Plant cells have cell walls; animal cells do not
	3. Animal cells have mitochondria; plant cells do not
	4. Animal cells have centrioles; plant cells do not
3. Pancreatic islet cells were cultured in a medium containing radio-labeled amino acids. Every five minutes, a sample of cells were removed from the culture, washed and fractionated. The radioactivity of each fraction was then measured. The results showed that in the first five minutes, most of the radioactivity was found in the rough endoplasmic reticulum. After 30 minutes, most of the radioactivity was found in the Golgi apparatus. After 60 minutes, almost all of the radioactivity was found in the cell membrane.
4. Which of the following shows the correct sequence of events regarding the radio-labeled protein in the cell described?
	1. Nucleus🡪 cytoplasm🡪 ribosome🡪rough ER🡪golgi🡪exocytosis
	2. Nucleus🡪rough ER 🡪golgi 🡪membrane 🡪exocytosis
	3. Rough ER 🡪golgi 🡪membrane
	4. Rough ER 🡪golgi 🡪vesicle 🡪membrane
5. Phosphorylation cascades involving a series of protein kinases are useful for cellular signal transduction because
	1. they are species specific.
	2. they always lead to the same cellular response.
	3. they amplify the original signal manyfold.
	4. they counter the harmful effects of phosphatases.
6. In general, a signal transmitted via phosphorylation of a series of proteins
	1. brings a conformational change to each protein.
	2. requires binding of a hormone to a cytosol receptor.
	3. cannot occur in yeasts because they lack protein phosphatases.
	4. requires phosphorylase activity.
7. A cell containing 92 chromatids at metaphase of mitosis would, at its completion, produce two nuclei containing how many chromosomes?
	1. 12
	2. 16
	3. 46
	4. 92
8. The correct sequence of steps in the M phase of the cell cycle is
	1. prophase, prometaphase, metaphase, anaphase, telophase.
	2. prophase, metaphase, prometaphase, anaphase, telophase.
	3. prophase, prometaphase, metaphase, anaphase, telophase, cytokinesis.
	4. prophase, metaphase, anaphase, telophase, cytokinesis.