Fifth Grade “Cells: Structures and Processes” Assessment

1a. All living things are made up of ________________________________.
   a. cells  
   b. tissues  
   c. organisms  
   d. systems

1b. All living things are made up of ________________________________.

1c. Explain what cells are and how they were discovered:
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

2a. The part of the cell that lets things in and out is called the ________________________.
   a. mitochondria  
   b. cell membrane  
   c. amoeba

2b. What is the function of the cell membrane?
   a. selectively allows substances in and out of the cell  
   b. acts as the cell’s control center  
   c. carries out the chemical activities of the cell  
   d. store food, water, or wastes

2c. Compare the cell membrane to a door.
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

3a. What part of the cell is surrounded by a membrane, contains genetic material, and divides for reproduction?
   a. nuclear membrane  
   b. nucleus  
   c. cytoplasm  
   d. mitochondria

3b. The part of the cell that is surrounded by a membrane, contains genetic material, and divides for reproduction is called the ________________________________.

3c. Explain three characteristics and functions of the nucleus:
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
4a. What part of the cell is the jelly-like substance that contains organelles?
   a. nucleus  
   b. cell wall  
   c. cell membrane  
   d. cytoplasm

4b. What part of the cell is the jelly-like substance that contains organelles?

4c. Describe the relationship of cytoplasm to the other organelles:

5a. This organelle produces the cell’s energy:
   a. mitochondria  
   b. vacuoles  
   c. nucleus  
   d. ribosome

5b. Explain what the mitochondria does:

5c. Compare and explain the functions of mitochondria and ribosome:

6a. The organelles which store food, water and wastes are called ____________________.

6b. What three things do vacuoles store?
   1. ____________________
   2. ____________________
   3. ____________________

6c. Compare a vacuole to a storage tank:

________________________________________________________________________
7a. Plant cells are different from animal cells because they have cell walls and ________________________________.

7b. How are plant cells different from animal cells?
   1. ____________________________________________________________________
   2. ____________________________________________________________________

7c. In the following pictures, label each cell plant or animal and then identify by labeling the two differences in the plant cell.

8a. Single-celled organisms without a nucleus are called _____________________.
   a. protists
   b. monerans
   c. plants
   d. animals

8b. Single-celled organisms without a nucleus are called _____________________.

8c. What is the difference between monerans and protists?
   ____________________________________________________________________
   ____________________________________________________________________
   ____________________________________________________________________
   ____________________________________________________________________
   ____________________________________________________________________
   ____________________________________________________________________
   ____________________________________________________________________

9a. Amoeba and protozoans are examples of _________________________________.

9b. Give an example of a single celled organism.______________________________
9c. Explain what protozoan means in Greek and describe their life form.

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10a. Which of the following statements is not true?
    a. muscle cells are long and thin
    b. cells are different shapes in order to perform different functions
    c. red blood cells are tiny and rounded
    d. cells are all the same shape and size

10b. Why are cells shaped differently? Give one example.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

10c. Explain the relationship between a cell’s shape and its functions. Give two examples.

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________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

11a. Which is larger in a living organism: a tissue or a system?

________________________________________________________________________

11b. Put the following in order from smallest to largest: tissues, systems, cells, organs.

________________   _________________  _________________   _________________

11c. Explain the relationship between tissues, systems, cells, and organs.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
12a. In complex organisms, groups of cells form _________________.
   a. systems
   b. tissues
   c. organs
   d. neurons

12b. What do groups of cells form?

________________________________________________________________________

12c. Explain how cells form tissue in plants and animals.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

13a. Tissues with similar functions form _________________________________.
   a. organs
   b. systems
   c. cells
   d. neurons

13b. Tissues with similar functions form _________________________________.

13c. Explain how organs are formed in plant and animal tissues.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

14a. Organs that work together form _________________________________.
   a. tissues
   b. systems
   c. cells
   d. neurons

14b. Organs that work together form _________________________________.

14c. Give an example of organs that work together in a system.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

The following Colorado Model Content Standards are covered in this assessment by the questions indicated:

Questions 2a, 2b, 2c, 3a, 3b, 3c, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 6c: Standard 5-8.3.3.a describing the observable components and functions of a cell.
Questions 7a, 7b, 7c, 8a, 8b, 8c, 10a, 10b, 10c, 12a, 12b, 12c: Standard 5-8.3.3.b comparing and contrasting the basic structures and functions of different types of cells.
Answer Key

1a. a. cells
1b. cells
1c. Acceptable answers could include:
   - a cell is the smallest part of any living thing that is able to function by itself; plants and animals are made up of tiny units made of cells
   - cells were discovered over 300 years ago by Robert Hooke

2a. b. cell membrane
2b. a. selectively allows substances in and out of the cell
2c. Acceptable answers could include:
   - The cell membrane allows food, water and oxygen into the cell and lets waste out, much like a door allows people and things to go in and out of it.

3a. b.
3b. nucleus
3c. Acceptable answers could include:
   - surrounded by a nuclear membrane, contains genetic material, and divides for reproduction

4a. d. cytoplasm
4b. cytoplasm
4c. Acceptable answers could include:
   - the cytoplasm is a substance in which the other organelles move around in, thus it surrounds the organelles

5a. a. mitochondria
5b. the mitochondria are cell organelles which produce the cell’s energy through respiration
5c. Acceptable answers could include:
   - The mitochondria and ribosomes are both organelles inside the cell. They both produce items for the cell. The mitochondria produce the cell’s energy through respiration. The ribosomes produce the cell’s protein.

6a. vacuoles
6b. hold food, water, and wastes
6c. Acceptable answers could include:
   - Vacuoles are organelles inside the cell that hold food, water, and waste, much the same way as a storage tank would hold material.

7a. chloroplasts
7b. cell walls and chloroplasts
7c. Acceptable answers could include:

8a. b. monerans
8b. monerans
8c. Acceptable answers could include:
- The difference between a moneran and a protist is that a moneran is a single-celled organism without a nucleus and a protist is a single-celled organism with a nucleus.

9a. single-celled organisms
9b. amoeba, protozoans, some algae, euglena, paramecium
9c. Acceptable answers could include:
- “proto” means early and “zoan” means animal. Protozoans are single-celled organisms that are the most primitive form of animal life.

10a. d. cells are all the same shape and size
10b. Acceptable answers could include:
- Cells can be different shapes depending on the jobs they do. Muscle cells are long and thin so they can expand and contract to help the body move. Red blood cells are tiny and rounded so they can squeeze through blood vessels and bring oxygen to other cells of the body. The cells in a tree trunk are long and thin, with tubes to transport food and water up and down the tree. The cells in plant’s leaves are flattened to catch the maximum amount of the sunlight they use to make food.
10c. Acceptable answers could include:
- Cells can be different shapes depending on the jobs they do. Muscle cells are long and thin so they can expand and contract to help the body move. Red blood cells are tiny and rounded so they can squeeze through blood vessels and bring oxygen to other cells of the body. The cells in a tree trunk are long and thin, with tubes to transport food and water up and down the tree. The cells in plant’s leaves are flattened to catch the maximum amount of the sunlight they use to make food.

11a. systems
11b. cells, tissues, organs, systems
11c. Acceptable answers could include:
- In complex organisms, groups of cells form tissues, tissues with similar functions form
organs, organs work together within a system.

12a. b. tissues
12b. tissues
12c. Acceptable answers could include:
   - In animals, skin cells form into skin tissue or muscle cells form muscle tissue.
   - In plants, the skin of an onion contains individual cells or the bark of a tree also has individual cells that make it up or form the tissue.

13a. a. organs
13b. organs
13c. Acceptable answers could include:
   - In animals, the muscle tissue forms organs like the heart, stomach, or brain.
   - In plants, the tissues form organs like the root or flower

14a. b. systems
14b. systems
14c. Acceptable answers could include:
   - digestive, circulatory, respiratory, skeletal, muscular, endocrine, or nervous systems