1. A student could tell the difference between onion skin cells and cheek cells because the onion skin cells have a **cell wall and chloroplasts**.

2. What is the difference between a prokaryotic and a eukaryotic cell? **Prokaryotes have no membrane-bound organelles**.

3. Why does a virus require a host cell? **Because they are not able to make proteins on their own**.

4. What type of organisms are prokaryotes? **bacteria**.

5. The function of a cell membrane is to **(1) control what enters and leaves the cell, (2) support the shape of the cell, and (3) contain identification markers for other cells**.

6. In the final phase of completion, proteins are modified by special enzymes in what organelle? **Golgi apparatus**.

7. In which organelle would water and dissolved materials be stored? **vacuole**.

8. Describe the structure and function of the following organelles: endoplasmic reticulum, ribosomes, Golgi apparatus, mitochondrion
   (a) **ER** - network of interconnected membranes forming sacs and canals; transports proteins.
   (b) **ribosomes** - ribosomal RNA; site of protein synthesis.
   (c) **Golgi apparatus** - membranous sacs; modify and package proteins.
   (d) **mitochondrion** - membranous sacs; produces ATP.

9. Osmosis is defined as the movement of **water molecules from a high concentration to a low concentration through a selectively permeable membrane**.

10. The structure and function of membrane proteins are described as **globular proteins that create narrow passageways or channels for molecule transport**.

11. The cellular structure that is involved in producing ATP during aerobic respiration is the **mitochondrion**.

12. The membrane-bound organelles which convert solar energy to chemical energy are? **chloroplasts**.

13. What is the function of the nucleus?
   (a) **stores DNA**
   (b) **controls most of the cell's processes**
   (c) **contains the information needed to make proteins**
14. Which structure makes proteins using coded instructions that come from the nucleus? ribosome

15. The main function of the cell wall is to support and protect the cell.

16. During photosynthesis, trees convert carbon dioxide and other materials to sugars.

17. The source of energy for photosynthesis is the sun.

18. Chloroplasts and mitochondria are organelles that are necessary for cells and organisms to function. Which type of organisms would have chloroplasts? Plants and algae

19. $6 \text{CO}_2 + 12 \text{H}_2\text{O} \rightleftharpoons \text{Light} \rightarrow C_6\text{H}_{12}\text{O}_6 + 6 \text{H}_2\text{O} + 6 \text{O}_2$
   
   Chloroplasts
   
   This formula is for which cellular process? photosynthesis

20. The products of cellular respiration are CO$_2$, H$_2$O and ATP

21. Which organelle is responsible for cellular respiration? mitochondrion

22. Which organism(s) would perform photosynthesis? Plants and algae and some bacteria

23. A cellular process that uses oxygen as one molecule of glucose is broken down to produce energy in the form of ATP is called aerobic respiration

24. Fermentation is an anaerobic breakdown of carbohydrates to produce a small amount of ATP.

25. The diagram represents part of the process of cellular respiration. Energy is released and made available for metabolic activities at which step(s)? step 2

26. Which organelles help provide cells with energy? Mitochondria and chloroplasts
27. Which organism(s) would perform cellular respiration? Plants, animals, bacteria, fungi, protists

28. The reactants in photosynthesis are CO₂ and H₂O

29. The type of sugar produced by photosynthesis is Glucose

30. Which molecule in plant cells first captures the radiant energy from sunlight? chlorophyll

31. A cell from heart muscle would probably have an unusually high proportion of which organelle? mitochondria

32. Plants take in energy by absorbing sunlight.

33. Most cell membranes are mainly composed of proteins and lipids.

34. In a cell, which structure is the site of protein synthesis? ribosomes

35. Which structures are found in every living cell? Cell membrane and ribosomes

36. Factors that increase the rate of diffusion of molecules across a semi-permeable membrane are distance involved, concentration of the substances, and weight of the molecules.

37. The series of diagrams represents a process carried out by a cell. This process is known as phagocytosis

38. The cell membrane of the red blood cell will allow water, oxygen, carbon dioxide, and glucose to pass through. Because other substances are blocked from entering, this membrane is called semi-permeable

39. Which organelle converts the chemical energy stored in food into compounds that are more convenient for the cell to use? mitochondrion

40. Unlike the cell membrane, the cell wall is usually made of tough fibers called cellulose.

41. Diffusion is the movement of molecules from an area of high concentration to an area of low concentration.

42. Diffusion occurs because molecules constantly move and collide with each other.

43. Which means of particle transport requires input of energy from the cell? Active transport
44. Two organelles that are common to plant cells but not to animal cells are _cell wall and chloroplasts_.

45. Which parts do prokaryotic cells, eukaryotic cells, and viruses all share? _Nucleic acids and proteins_.

46. A wet mount of unstained elodea (a green aquatic plant) is observed using high power (400x) of a compound light microscope. Which structures would most likely be observed? _Chloroplast and cell wall_.

47. What _best_ completes this concept map? _Plant cell_.

48. Prokaryotes lack _a nucleus and membrane-bound organelles_.

Cell Biology Study Guide: pg. 4