

Study Guide for: Energy and Chemistry of Life Part II (united streaming)

Name \_\_\_\_\_

- 1.) Chemical bonds store \_\_\_\_\_.
- 2.) When these chemical bonds are broken, energy is \_\_\_\_\_.
- 3.) In some reactions there is an energy surplus (extra energy), this type of reaction is called an \_\_\_\_\_ reaction.
- 4.) What is the "energy currency" of life? \_\_\_\_\_
- 5.) ATP is made of the molecule adenosine plus three \_\_\_\_\_ groups.
- 6.) Which bond of ATP is the high energy bond? \_\_\_\_\_
- 7.) What molecule is created when the third phosphate is removed from ATP? \_\_\_\_\_
- 8.) Photosynthesis uses carbon dioxide and water to create \_\_\_\_\_.
- 9.) Gases get in and out of leaves through tiny holes called \_\_\_\_\_
- 10.) What 3 organisms can undergo photosynthesis?
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
- 11.) Photosynthesis occurs in these organelles \_\_\_\_\_
- 12.) Chloroplasts have an outer \_\_\_\_\_ & an inner \_\_\_\_\_.
- 13.) These membranes enclose the \_\_\_\_\_.
- 14.) Thyalkoid membranes are concentrated in stacks called \_\_\_\_\_.
- 15.) What makes the grana green? \_\_\_\_\_ This is what actually captures energy from sunlight.
- 16.) A photon of light from the sun hits a molecule of chlorophyll in the grana. This excites an electron which gives off enough energy to add a \_\_\_\_\_ onto \_\_\_\_\_ to make \_\_\_\_\_! This happens during the \_\_\_\_\_ reaction of photosynthesis. Also, \_\_\_\_\_ is broken down and \_\_\_\_\_ is released.
- 17.) The dark reactions of photosynthesis do not require \_\_\_\_\_. These reactions occur in the fluid filled area of the chloroplast called the \_\_\_\_\_.
- 18.) ATP created in the light reactions causes carbons, oxygens, and hydrogens to be bonded together to form this awesome molecule? \_\_\_\_\_ (and that's what it's all about!)

19.) We owe our lives to photosynthesis because it creates nearly all the \_\_\_\_\_ on this planet...a lot comes from those little algae.

20.) The first stage of cellular respiration happens here?  
\_\_\_\_\_

21.) During glycolysis, this molecule is broken down \_\_\_\_\_ (gee, we just made it!)

22.) \_\_\_\_\_ acid is created when glucose is broken down.

23.) In what organelle is most of the cells ATP produced?  
\_\_\_\_\_

24.) After glycolysis comes this step, the \_\_\_\_\_ cycle. \_\_\_\_\_ ATP are created. Unlike glycolysis, this step actually happens in the \_\_\_\_\_.

25.) Carbon dioxide is a byproduct of the above process. In humans, where does the carbon dioxide go?  
\_\_\_\_\_

Where does it go in plants?  
\_\_\_\_\_

26.) How many ATP are created during the electron transport chain?  
\_\_\_\_\_

27.) How many NET ATP are created as a result of aerobic cellular respiration? \_\_\_\_\_

28.) What organisms undergo cellular respiration?  
\_\_\_\_\_

29.) Why do we and most other organisms need oxygen? (the answer is not breathing!) \_\_\_\_\_

30.) Yeast and some bacteria can undergo \_\_\_\_\_ cellular respiration, meaning they do not need oxygen.

### QUIZ

1. ATP is used by cells of all living things as a source of readily-available \_\_\_\_\_.
2. ATP levels in cells are renewed from ADP and inorganic phosphate through the important metabolic process called \_\_\_\_\_.
3. In most cases, the sugar called \_\_\_\_\_ is critical to the ATP renewal process.
4. In photosynthesis, carbon dioxide and \_\_\_\_\_ are combined in the presence of sunlight and chlorophyll.
5. True or False: Most chlorophyll is found in the green-colored organelles called mitochondria.