

Directions: Complete the following questions in the space below.

Chapter 1

1. Identify the 6 characteristics of all living things and briefly describe each.

2. Define the following terms and give an example of each:

a. Observation-

b. Hypothesis-

c. Theory-

d. Conclusion-

e. Manipulated Variable

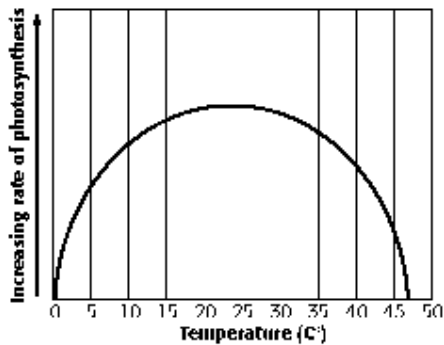
f. Responding Variable

3. How are the experimental and control group related?

4. Explain the relationship between autotrophs and heterotrophs?

5. What molecule is responsible for carrying out the blue prints for growth and development of a cell? What does it stand for?

6.



A. At what temperature is the rate of photosynthesis the greatest?

B. Explain how you came to this conclusion.

7.

PLANT	TREATMENT	NUMBER OF BLOSSOMS			
		DAY 30	DAY 35	DAY 40	DAY 50
1	Water w/ Megagrow	7	15	23	25
2	Water w/ Megagrow	9	21	24	26
3	Water w/ Megagrow	6	18	21	22
4	Water Only	0	0	3	5
5	Water Only	3	6	10	11
6	Water Only	2	6	9	13

A. Which plants represent the control group?

B. Plant # 4's data is out of line with regards to the other data. What do we do with this data?

C. How could this study be improved?

8. List the subatomic particles and their charges.

What will the atomic number tell you about the element?

What will the atomic mass (or mass number) tell you about the element?

How many protons are in one molecule of water?

9. What is the difference between covalent and ionic bonds?

10. What is a catalyst?

What acts as a catalyst in cells?

11. Describe the polar charge on a water molecule.

12. Draw the pH scale. Label the values which will indicate acid and basic solutions.

Which part of the pH scale would you find chemicals with a low concentration of H^+ ?

...a high concentration of H^+ ?

13. What do all organic compounds have in common?

14. List the 4 macromolecules and their monomers.

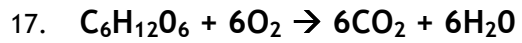
Graph the following:

Rate of Activity (Enzyme X)	Rate of Activity (Enzyme Y)	Temp. (°C)
3%	0%	0
20%	12%	10
45%	22%	20
57%	44%	30
65%	56%	40
2%	62%	50
0%	68%	60
0%	70%	70
0%	71%	80
0%	72%	90
0%	0%	100

15. Using the graph you made, at what temperature does enzyme X and enzyme Y have the same rate of activity?

16. What is the optimal temperature for each enzyme?

Which enzyme is active over the smallest (narrowest) temperature range?



Label the reactants and the products.

18. What limits cell size?

19. Differentiate between prokaryotes and eukaryotes. Give an example of each.

20. List the function of the following organelles:

a. Mitochondria-

b. Cell Membrane-

c. Ribosomes-

d. Golgi Apparatus-

e. Nucleus-

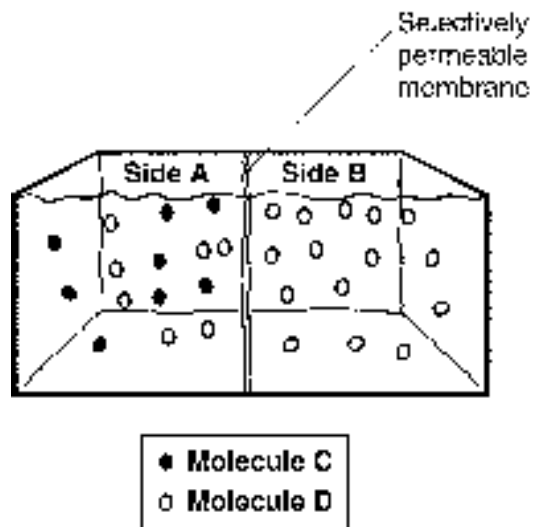
f. Vacuole (plant/animal)-

g. Chloroplast-

h. Endoplasmic Reticulum-

21. Draw a plant and animal cell. Include all the organelles listed in #20. Be sure to label the organelles.

22. List, in order, the levels of organization in living things from simple to most complex.



23. What will happen to the C and D molecules in the above diagram?

What will happen at equilibrium?

24. What is the difference between diffusion and osmosis?

25. Compare and contrast endocytosis and exocytosis.

26. State the difference between pinocytosis and phagocytosis.

27. A cell is placed in a solution where the cell swells. Is the concentration of the solution hypertonic, hypotonic, or isotonic?
28. Where does the source of all energy originate?
29. Define photosynthesis. What is the role of chlorophyll in photosynthesis?
30. Write a balanced equation for photosynthesis.
31. Write a balanced equation for respiration.
32. What is the relationship between the two equations above? (from questions 30 and 31)
33. What is the major atmospheric byproduct of photosynthesis AND where does it come from?
34. What is the purpose of ATP?

35. Define Glycolysis and state where it occurs in the cell.

36. Define aerobic respiration and where it occurs in the cell.

37. What are the 3 parts of cellular respiration?