Name _____

PRE AP FALL FINAL STUDY GUIDE

1. Biomolecule Review: Fill out the table below to review the 4 biomolecules

4 Biomolecules	"Building Block" subunits/MONOMERS	Function
P		
N		
C		
L		

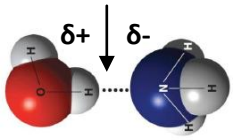
2. Write the biochemical reaction pattern for the following 2 common cellular reactions using the 3 terms provided (BIG molecule, BB, H_2O)

CONDENSATION: _____ + _____ → _____ + _____

HYDROLYSIS: _____ + _____ → _____ + _____

3. Match the chemical bond that is seen in the diagram(s) below.

Chemical Bond Choices:
Ionic Nonpolar Covalent Polar Covalent Hydrogen



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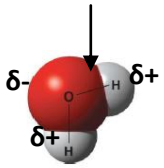

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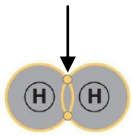

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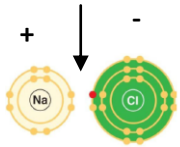

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4. Match the following carbohydrates to the appropriate place in the table below:

Carbohydrate Molecules:
starch glycogen sucrose glucose cellulose fructose lactose chitin

Monosaccharides	Disaccharides	Polysaccharides

5. Which of the following lists contains ONLY proteins?
   a. hemoglobin, cholesterol, antibodies, muscles
   b. muscle, insulin, glycogen, hemoglobin
   c. antibodies, muscles, insulin, collagen
   d. collagen, insulin, hemoglobin, glycerol

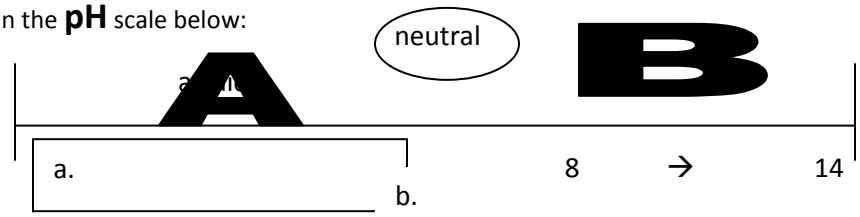
6. Which of the following lists does NOT contain a polysaccharide?
   a. glucose, starch, chitin
   b. sucrose, glucose, collagen
   c. glycogen, cellulose, glucose
   d. insulin, sucrose, cellulose

7. A Fluorine atom has an atomic number of 9… Is this atom sta

8. A Carbon atom has an atomic number of 6….How many covalent bonds could it form?

9. Explain why solid ice floats in liquid water?

10. Fill in the **pH** scale below:



11. What is the importance of **ATP** molecules in living organisms? Show where the energy is stored with a diagram?

12. ***Using the figure to the right, properly identify the:***

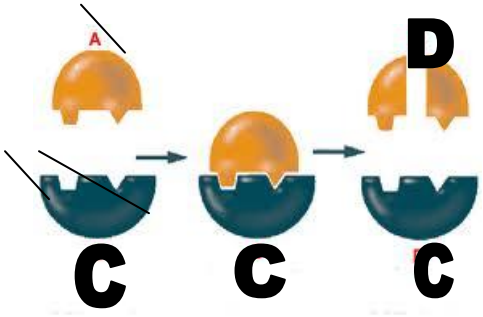
Enzyme

Reactant

Product

Enzyme's active site:

Substrate:



13. What is the importance of **enzymes** inside living organisms?

14. What is activation energy?

15. An enzyme is usually a _____ (biomolecule) that _____ up chemical reactions by lowering the _____ energy?

16. What does it mean when we say that an enzyme has been **denatured?**

17. Are enzymes reusable? Explain an example of this idea you observed in class

18. List **2** ways to increase enzyme speed in a typical human cell:

19. List **2** possible reasons why no bubbles may form after hydrogen peroxide is put on a cut?

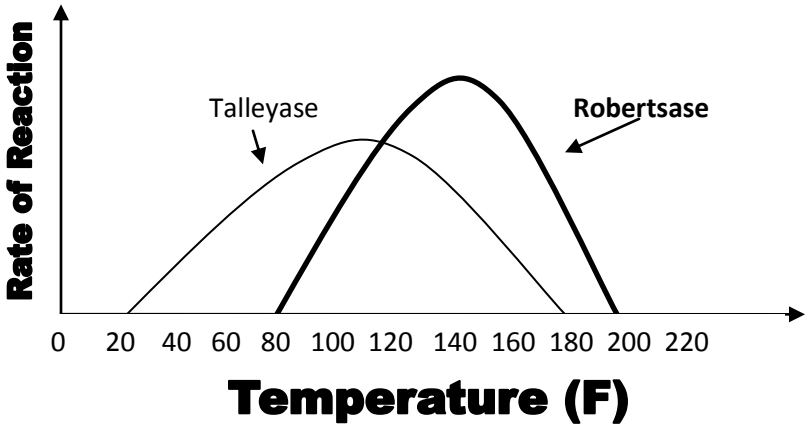
20. List **5** factors that can **SLOW** or **STOP** enzyme function.

Factor	Explain an example of this we saw/talked about in class

Analogy Comparisons:

21. monomer : polymer :: monosaccharide : _____
22. protein : amino acid :: DNA : _____
23. _____ electrons : covalent :: trade electrons : ionic bond
24. OSE : carbohydrate :: _____ : enzyme
25. key : lock :: _____ : enzyme active site
26. proton : positive :: _____ : neutral
27. starch : plants :: _____ : animals
28. water : polar :: lipid : _____
29. weak acid : pH 6 :: weak base : _____
30. lipid: nonpolar :: _____ : polar

Study the graph below and answer the following questions.



31. Provide an acceptable TITLE for this graph:

32. At what temperature does **Talleyase** work best? _____

33. At what temperature does **Robertsase** work best? _____

34. Which enzyme functions over the <u>longest range</u> of temperatures:

35. Which enzyme achieves the <u>highest rate</u> of chemical reaction:

36. Circle the temperature at which both enzymes work the best: 80 100 120 140 160 200

37. Circle the temperature at which NEITHER enzyme would work: 80 100 120 140 160 200

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38. Write the correct chemical equation for:
    a) Photosynthesis: _____ → _____
    b) Respiration: _____ → _____

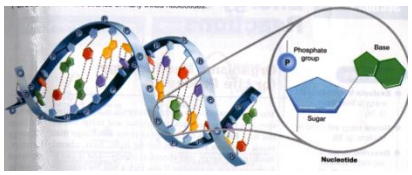
39. Circle (above) the **Reactants** for <u>photosynthesis</u> and the **Products** for <u>Respiration</u> …. How do they compare?

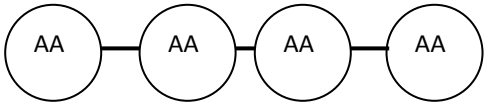
40. Which reaction above is Exergonic (Photosynthesis or Respiration) …. Explain WHY?

41. Which reaction above is Endergonic (Photosynthesis or Respiration) …. Explain WHY?

42. List 2 ways to cause plants to INCREASE their rate of photosynthesis:

IDENTIFY each biomolecule below: (carbohydrate, lipid, protein, nucleic acid, ATP, water)

43. 

44. 

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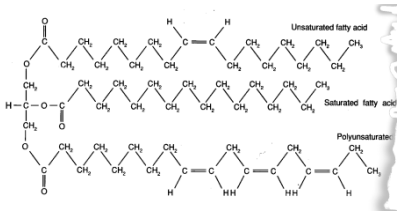
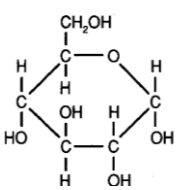
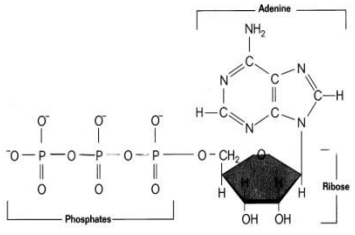
46. 

47. 

48. 

CELL REVIEW: Identify the cell parts whose FUNCTIONS are described below:

49._____ "power plant" of the cell where aerobic respiration produces ATPs of energy from sugars

50._____ network of narrow round tubes that detoxify poisons including drugs and alcohol, and produce lipids

51._____ the command center or "brain" of the cell where all cellular activities are coordinated

52._____ "packages" the cell materials for transport within or out of the cell like the Post Office, UPS,

53._____ the "gate keeper" that encloses the cell contents and regulates which materials get in or out

54._____ membrane-bound package that encloses proteins or food for transport throughout the cell

55._____ stringy noodles of genetic material in the nucleus that carry the directions for making proteins

56._____ membrane-bound sac with digestive enzymes to break down cellular or foreign materials,

57._____ network of flattened, ribosome covered tubes that transport and "accessorize' proteins

58._____ a microtubule and microfilament frame which gives a cell support and provides for organelle movement

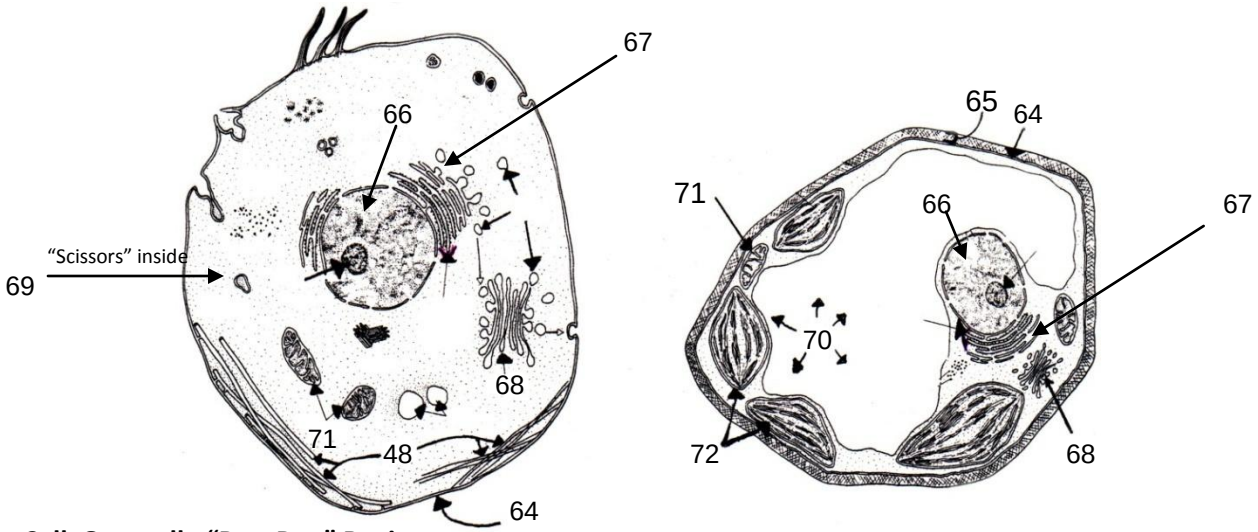
59._____ a thick, cellulose cell covering which gives shape, strength, and support to plant cells

60._____ site of protein production, the most numerous organelle in any cell

61._____ membrane-bound sacs that stores water, minerals, wastes

62._____ L -shaped microtubule bundles that assist cell division by producing a spindle

63._____ membrane-bound sac that contains green pigments for photosynthesis in plants



73. Cell Organelle "Boo-Boo" Review: Predict what problems a cell would have if the cell organelle identified in the diagram is broken.

#	Cell symptoms or problems if the organelle is BROKEN
64	
67	
68	
70	
71	
72	

74. Differentiate between **prokaryotic** and **eukaryotic** cells using the table below:

Cell Type	Definition	Examples
Prokaryotic		
Eukaryotic		