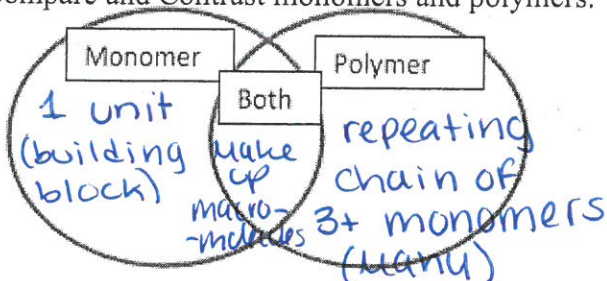


Biochemistry: (35 Questions)

Monomer/Polymer

27. Compare and Contrast monomers and polymers.



Macromolecules

28. Fill in the table below regarding macromolecules.

Macromolecule	Uses/Function	Monomer	Polymer
Carbohydrates	Day to Day Energy	Monosaccharide	Polysaccharide
Lipids	<ul style="list-style-type: none"> energy storage insulation brain function organ protection digest fat soluble vitamins 	X	X
Proteins	<ul style="list-style-type: none"> make up bone/muscle immune system enzymes transport in/out of cells 	amino acid	polypeptide
Nucleic Acid	<ul style="list-style-type: none"> store, copy, + transmit genetic info make proteins 	nucleotide	DNA RNA

Carbohydrates

29. What three elements do all carbohydrates contain?

- Carbon
- Hydrogen
- Oxygen

30. What is the relationship between O and H in Carbohydrates?

2x Hydrogen as Oxygen

31. Fill in the table below regarding polysaccharides.

Polysaccharide Examples	Is it found in Plant or Animal? (Circle One)	Can Human's Digest this? (Circle One)
Glycogen	Plant or <u>Animal</u>	<u>Yes</u> or No
Starch	<u>Plant</u> or Animal	<u>Yes</u> or No
Cellulose	<u>Plant</u> or Animal	Yes or <u>No</u>

Lipids

32. What are the two components of a lipid? glycerol + 3 fatty acids

33. Fill in the table below regarding types of fats.

Type of Fat	Amount of Hydrogen (H) (Circle One)	Found in Plants of Animals (Circle One)	Solid or Liquid (Circle One)	Healthier or Unhealthy (Circle One)
Saturated	<u>Lots</u> or Little	Plants or <u>Animals</u>	<u>Solid</u> or Liquid	Healthier or <u>Unhealthy</u>
Unsaturated	Lots or <u>Little</u>	<u>Plants</u> or Animals	Solid or <u>Liquid</u>	<u>Healthier</u> or Unhealthy

34. Describe several, 2 or more, functions of lipids in the body.

protect organs, insulate your body (keep warmth in),
(from bruising)
help you process thoughts + digest vitamins,

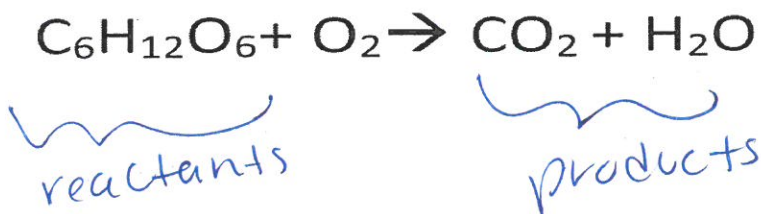
Proteins and Enzymes

35. How many total amino acids are there? 20

36. How do you get so many proteins from so few amino acids? change the order of
amino acids just like the alphabet

37. What bond forms between amino acids and links them together? peptide bond

38. In the chemical equation below, label the reactants and products.

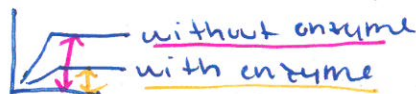


39. Fill in the table below regarding definitions of the following terms.

Term	Definition
Enzyme	catalysts of reactions (proteins that speed up reactions)
Substrate	a molecule (reactant) that bonds to an enzyme.
Lock and Key	The way of describing the special/unique fit between an enzyme & its substrate (only 1 enzyme works with 1 substrate just like a lock & key)
Activation Site	Region on the enzyme where the substrate binds and the reaction occurs
Activation Energy	Energy needed to start a reaction (enzymes lower this)

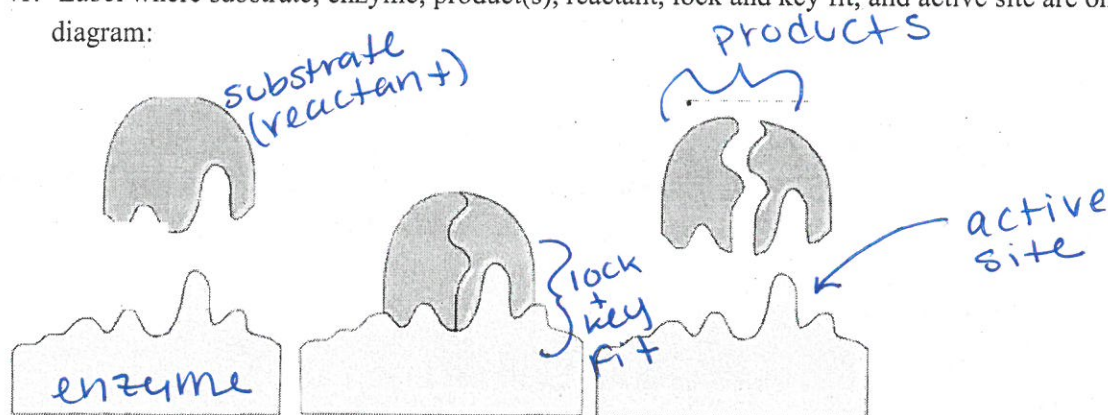
40. Explain the difference in activation energy between the reaction with the enzyme and without the enzyme.

A. What causes this difference?



Enzymes lower the energy needed to start a reaction which speeds up the chemical reaction.

41. Label where substrate, enzyme, product(s), reactant, lock and key fit, and active site are on the following diagram:



42. What happens to an enzyme if it becomes denatured? It unfolds causing it to lose its shape (active site) making it non-functional. It can no longer bond to its substrate.

Use the graphs to the right to answer the following questions:

43. What is the temperature required for maximum enzyme effectiveness?

40°C

44. What will happen to the enzyme's effectiveness if the solution is heated to 55°C?

a). Why? Effectiveness decreases

because the enzyme unfolds causing it to lose its shape making it unable to bind with its substrate.

45. What is the pH needed for maximum enzyme effectiveness?

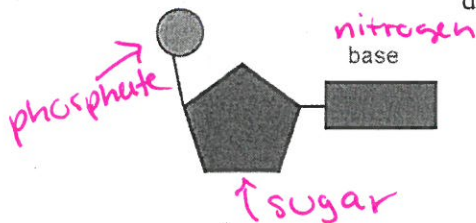
5.8

46. What will happen to the enzyme's effectiveness if the solution is made very acidic?

Effectiveness decreases because the enzyme will unfold and lose its shape making it unable to bind with its substrate.

Nucleic Acids

47. Label the three building blocks of a nucleotide on the diagram below.



48. Where is DNA found? nucleus

49. Describe the function of nucleic acids? store, copy, and transmit genetic information as well as make proteins

50. What are 3 differences between RNA and DNA molecules?

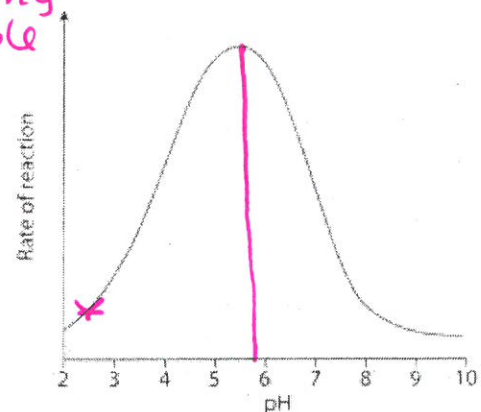
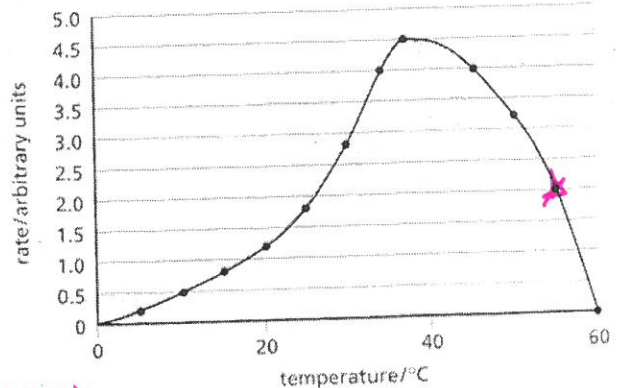
- | | | |
|----|-------------------|-----------------------|
| A. | 1 strand | 2 strands |
| B. | A/U | A/T |
| C. | Ribose | Deoxyribose |
| | can leave nucleus | stuck in the nucleus. |

51. What is a base pair?

A set (2) of nitrogen bases that bond together

52. List the base pairs for DNA and RNA.

A/T | A/U
G/C | G/C

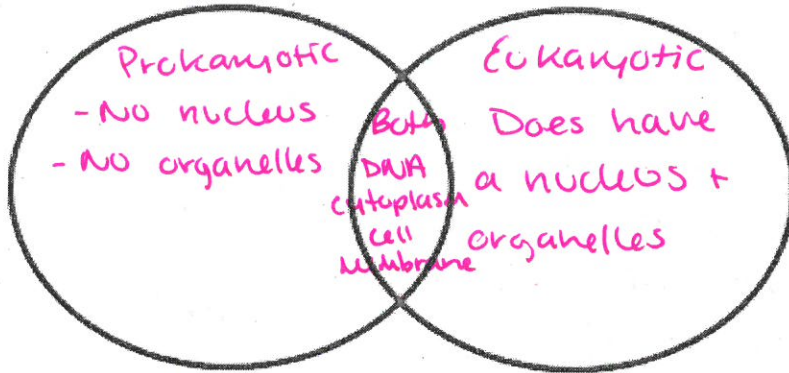


Chapter 7: Cells and Their Components (27 Questions)

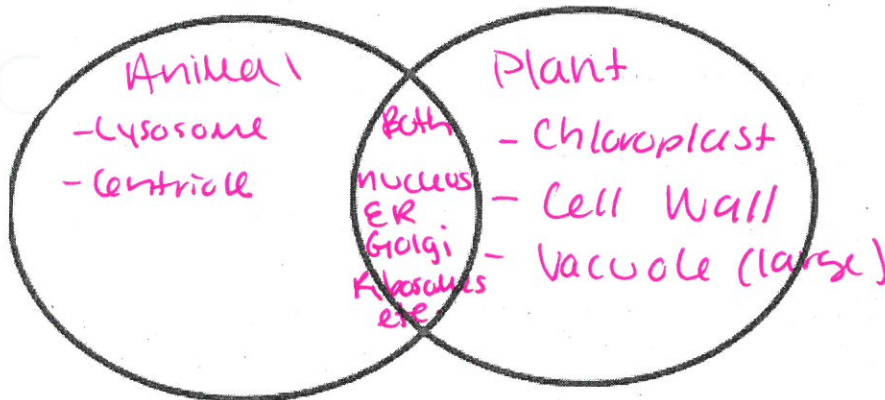
53. What are the three principles with the cell theory?

1. cells are the basic unit of structure + organization
2. cells come from pre-existing cells
3. all living things are made of cells

54. Compare and contrast prokaryote and eukaryote cells.



55. Compare and contrast animal and plant cells.



56. Fill in the table below regarding feedback.

Type of Feedback	Definition	Example	Diagram/Graph
Positive	When a change occurs, your body keeps accelerating that change making it worse.	• clotting Blood • childbirth	
Negative	When a change occurs your body responds by fixing the change/bringing conditions back to normal	• shivering • sweating • managing blood sugar levels	

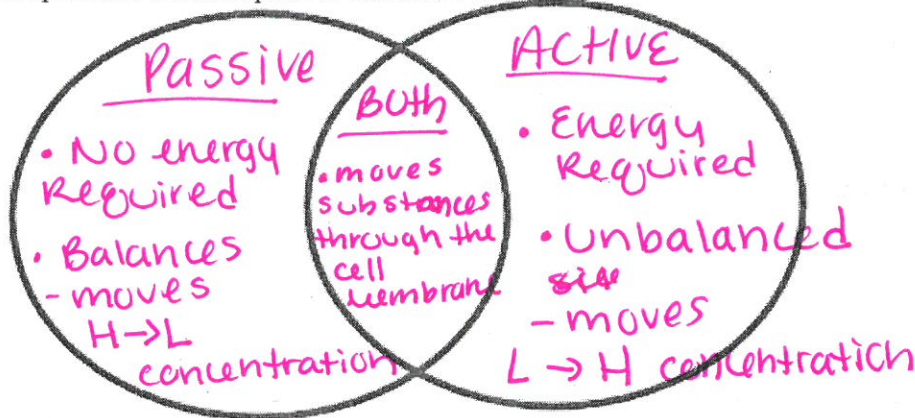
57. Fill in the table below regarding the function of cell parts and their presence in plant and/or animal cells.

Organelle	Function/Purpose in the cell	Is it found in plant cells, animal cells, or both
Nucleus	Controls the activities of the cell & contains DNA.	Both
Nucleolus	makes ribosomes	Both
Mitochondria	makes energy (ATP) for the cell to use from food	Both
Chloroplast	Takes sunlight and makes food for the cell to use	Plant
Cytoplasm	Jelly-like substance that holds organelles in place	Both
Rough ER covered in ribosomes	make, modify, and fold proteins	Both
Smooth ER	makes carbohydrates & lipids	Both
Golgi Apparatus	packages and ships materials around the cell.	Both
Lysosome	breaks down old/worn out cell parts & invaders	Mainly Animal
Vacuole	Stores excess food and water	Large → Plant Small → animal
Ribosomes	make proteins	Both
Cell Membrane	Controls materials entering/exiting the cell	Both
Cell Wall	Provides additional support and protection in plant cells.	Plant.

58. What is homeostasis? *Internal balance*

A. Why is it so important? *keeps us all (our bodies) in a narrow set of conditions necessary for life.*

59. Compare and Contrast passive and active transport.



60. Fill in the table below regarding types of transport.

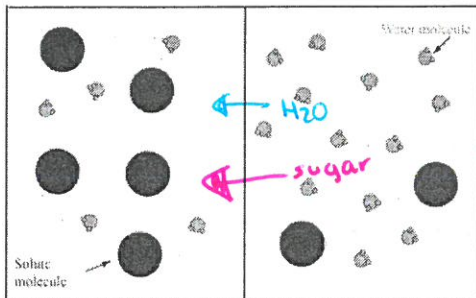
Type of Transport	Movement Type (High to Low or Low to High)	Types of Molecules Moving (examples)	Does it require energy? (Yes or No)
Diffusion	H → L	small elements/molecules: O ₂ , CO ₂ , H ₂	NO
Osmosis	H → L	water	NO
Facilitated Diffusion	H → L	large molecules: carbs, lipids, proteins, nucleic acids.	NO
Active	L → H	All	Yes

61. Fill in the table below regarding solutions created by osmosis.

Solution Type	Definition (Include water movement) (Into the cell, Out of the cell, Both)	Drawing (Before and After)
Isotonic	water moves in & out of cells equally	<p>Before After</p>
Hypertonic = EXIT	water exits the cell to try and balance with its surroundings	<p>WATER EXITS cell shrinks</p>
Hypotonic = HIPPO	water enters the cell to try and create balance with surroundings	<p>cell expands</p>

62. When does water stop moving across a membrane? *Never, water always moves.*

63. What direction would the sugar particles (large circles) move if active transport was at work?



solutes more concentrated, water less concentrated
HIGH conc.

solutes less concentrated, water more concentrated
LOW conc.

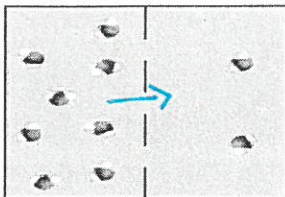
64. Using the diagram above, explain the direction the water molecules, small circles, pictured would move and why.

water would want to move left to try and creat balance (move from H concentration to L concentration).

65. If passive transport was occurring, draw how water would move across the cell membrane in the picture below. Explain why this occurs.

water would move right to create a balance (move from H → L concentration).

66. What type of solution would be produced in the diagram below. Explain why.



Hypotonic Solution - water is being forced into the cell.

Outside	Cell
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