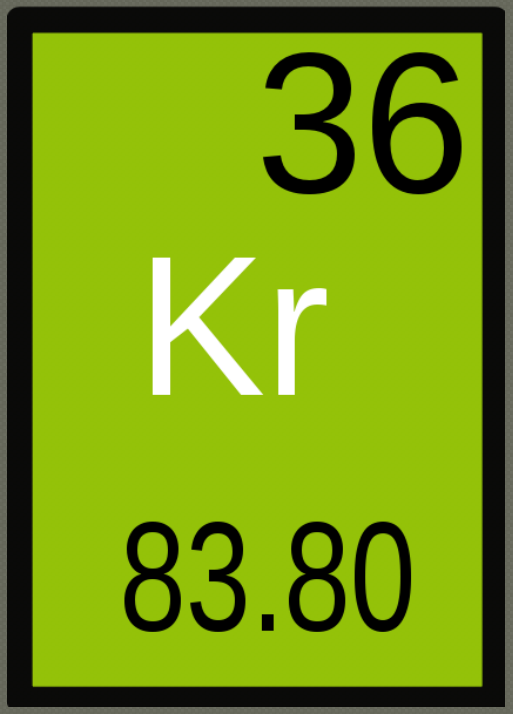
Bio Chem Hot Seat Review

Question 1

- How many protons, neutrons and electrons are in the following:



Answer 1

- Protons : 36 (Atomic #)
- Neutrons 48 (Mass-Protons)
- Electrons: 36 (Since not an ion protons=electrons)

Question 2

- What is the difference between a compound and a molecule?

Answer 2

- Molecule: two or more atoms stuck together
- Compound: two or more atoms of two or elements stuck together

Question 3

- What is an ion?
- What is an isotope?

Answer 3

- ION: atom has a charge – more or less electrons
- ISOTOPE: atom has an irregular mass – more or less neutrons

Question 4

- How many bonds does Carbon make?

Answer 4

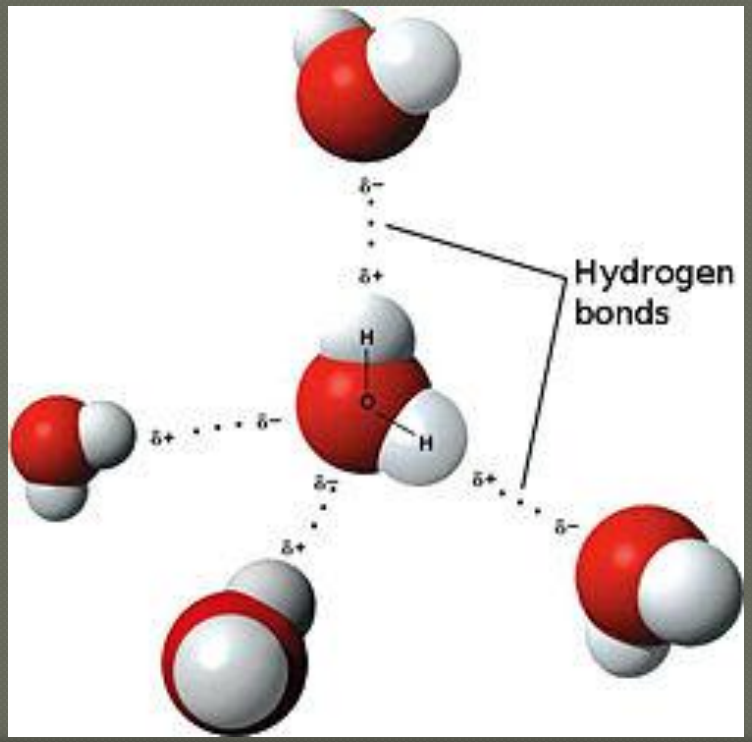
- Carbon makes 4 bonds
- Nitrogen makes 3 bonds
- Oxygen makes 2 bonds
- Hydrogen makes 1 bond

Question 5

- What is a hydrogen bond?

Answer 5

- Hydrogen bonds are formed between two water molecules due to the attraction between the slight charges. See diagram:

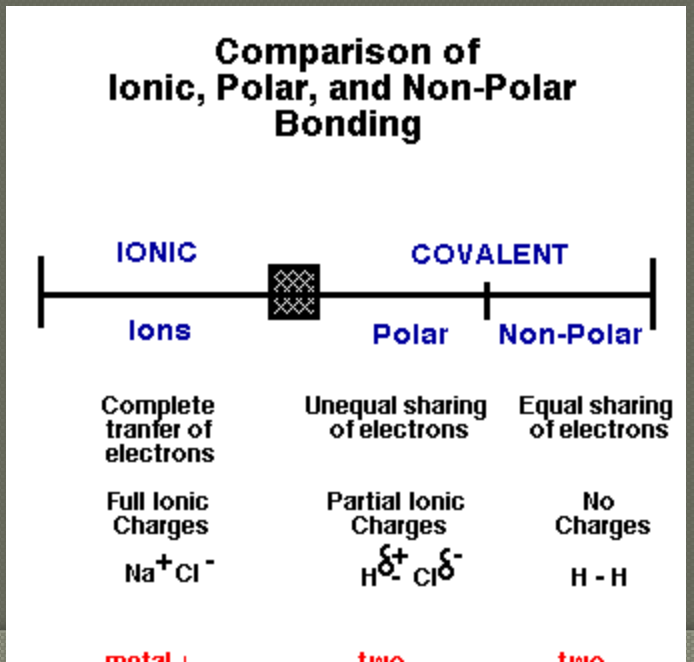


Question 6

- What is polarity?

Answer 6

- Polarity is the slight change on the "poles" of a water atom since the oxygen does not share the electrons equally. In fact the oxygen HOGS the electrons

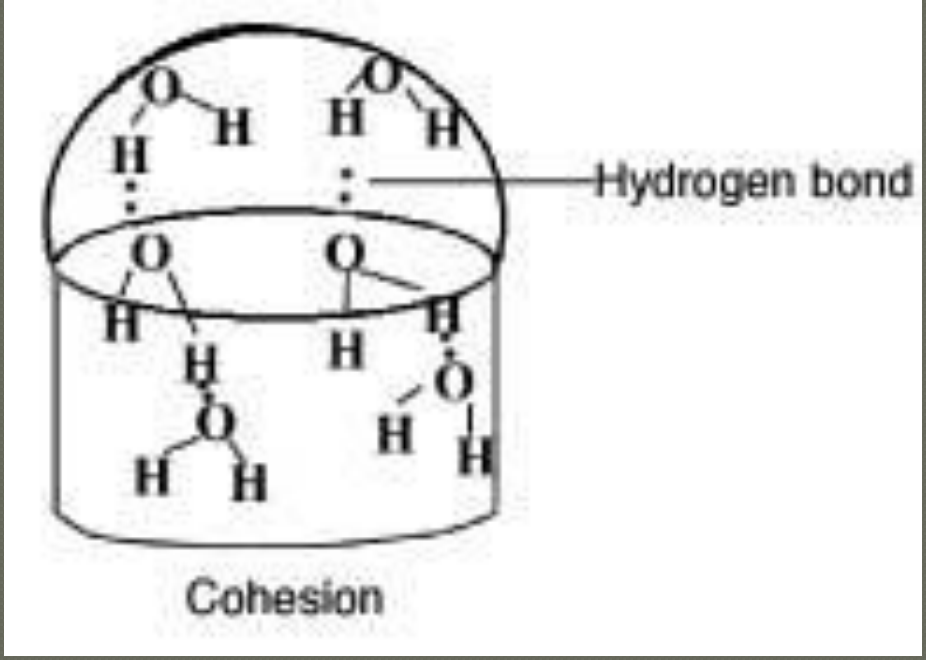


Question 7

- What is cohesion?

Answer 7

- Cohesion is water molecules sticking to other water molecules.



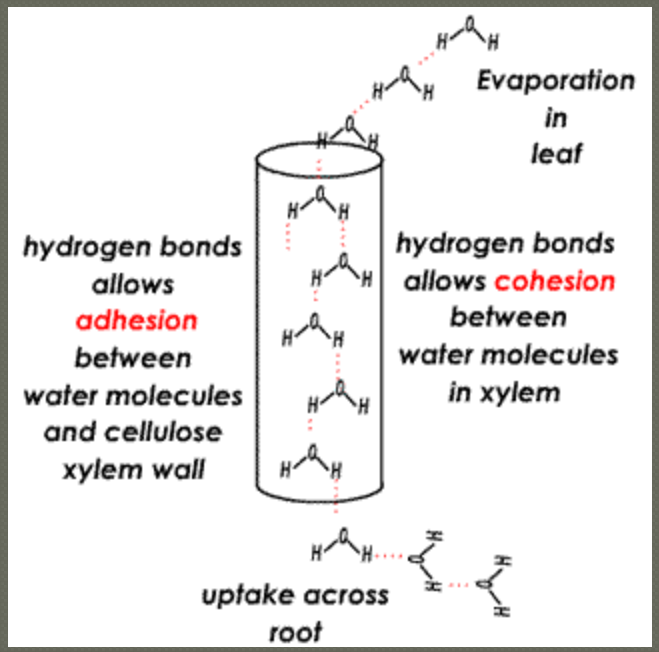
Question 8

- How is water able to go up the tubes in a plant?

Answer 8

Capillary Action

- Adhesion: Water sticks to the walls in the tubes.
- Cohesion: Water sticks to the other water molecules pulling each other up.



Question 9

- What ions are found in an acid?

Answer 9

- Ions in an acid are: H+

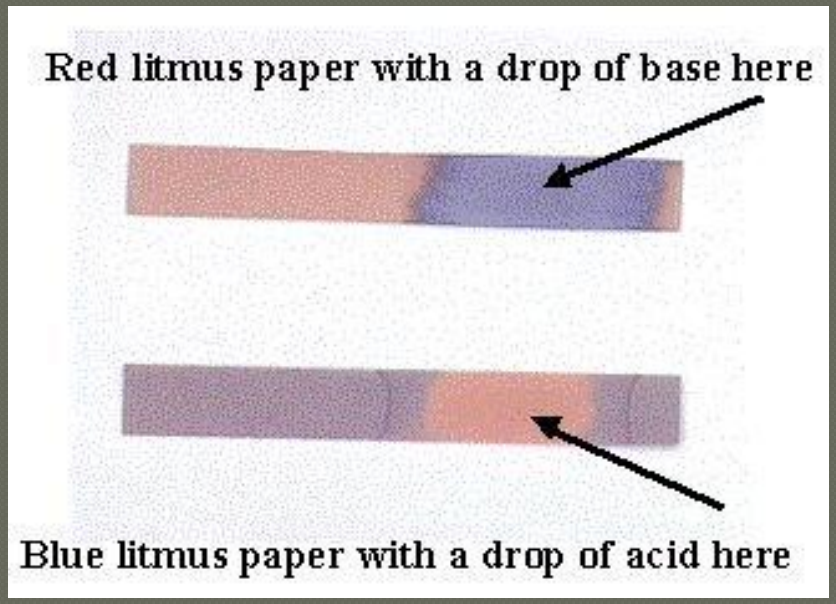
Question 10

- What does blue litmus paper test for?

Answer 10

- Blue limtus paper tests for acids. In the presence of an acid it will turn red. In a base it will stay blue. In a neutral it will stay blue.

- You should Know red Info too!



Question 11

- What is the pH range of a base?

Answer 11

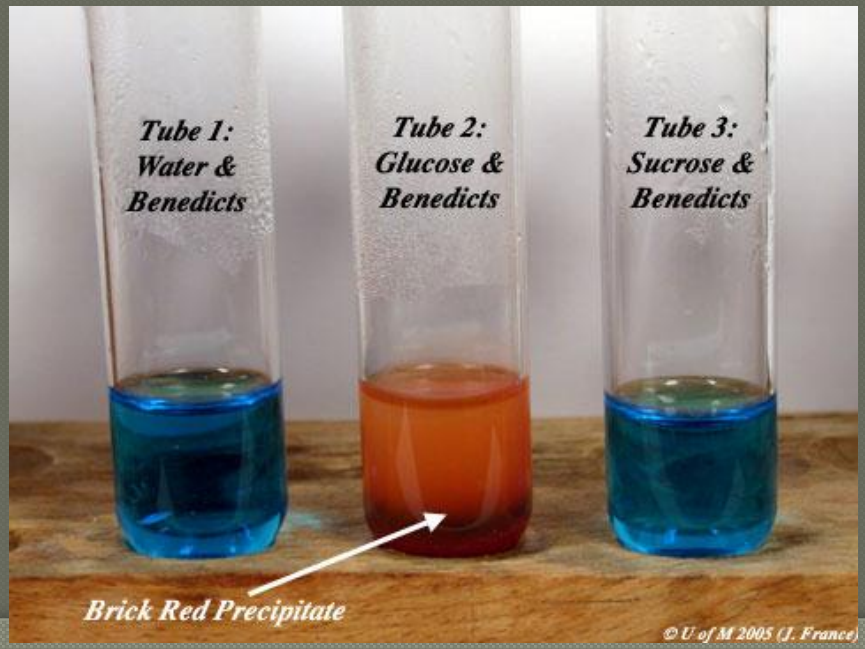
- pH range for a base is greater than 7 but less than 14. A strong base is close to 14. A weak base is close to 7.

Question 12

- What does Benedict's test for?
- What does a positive test look like?

Answer 12

- Benedicts tests for monosaccharides
- A positive result looks orange
- A negative result remains blue
- This is the test that you have to heat

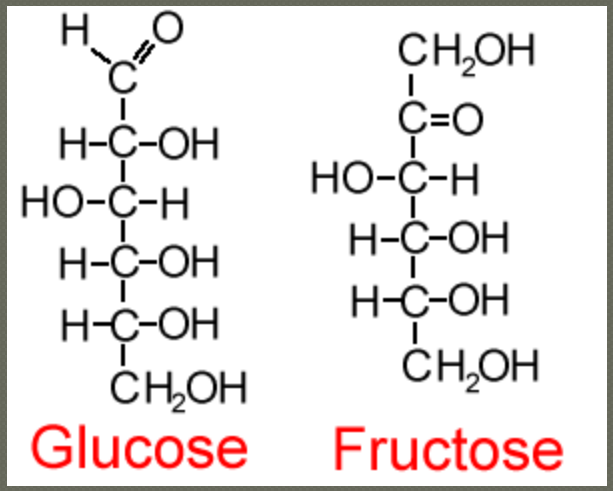


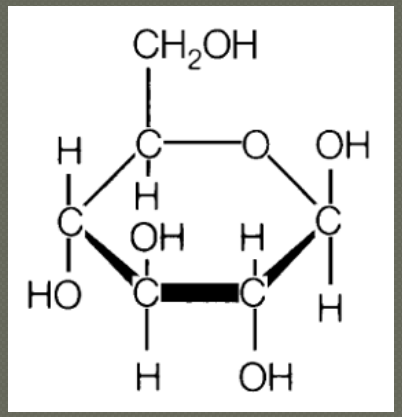
Question 13

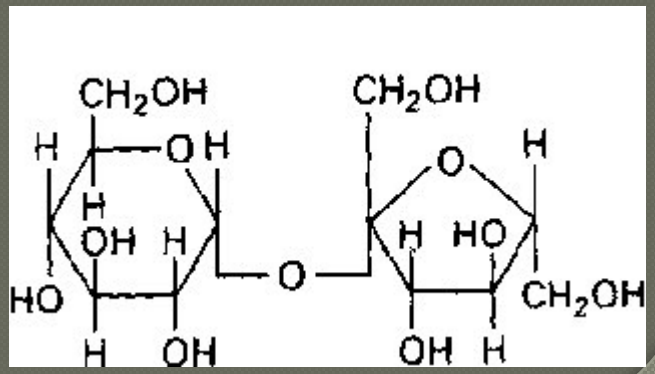
- How can you structurally identify a carb?

Answer 13

- For every oxygen it has two hydrogen

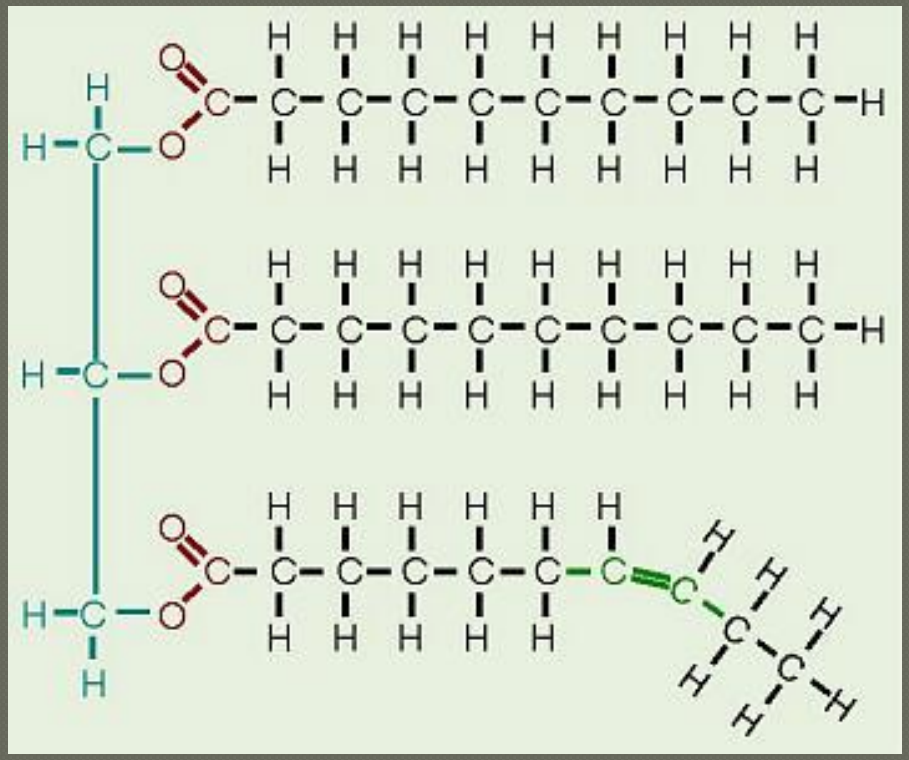






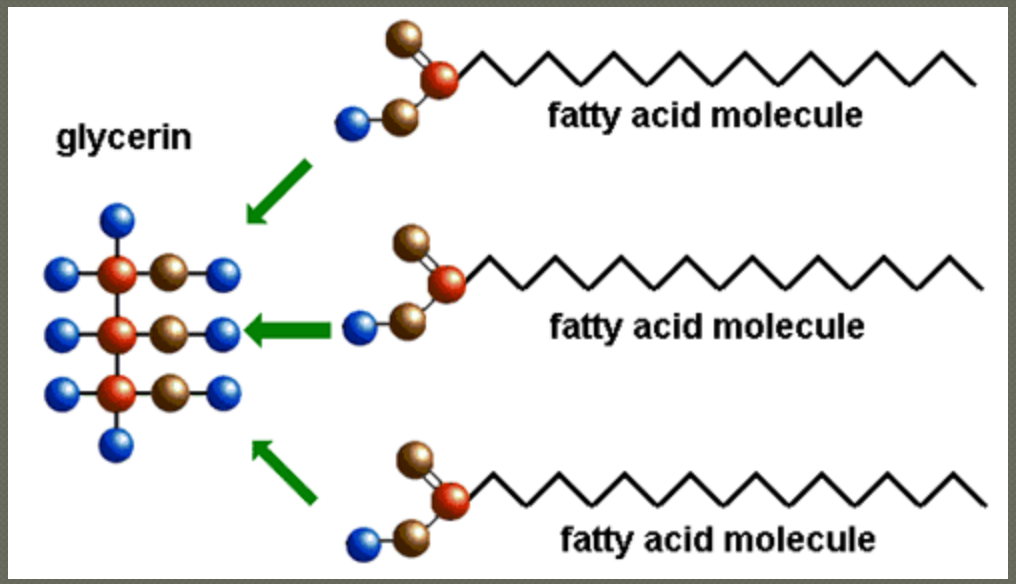
Question 14

- What is this a picture of?



Answer 14

- Lipid
- It has a glycerol backbone and 3 fatty acids.



Question 15

- What does a positive test result look like for the brown paper bag test?

Question 15

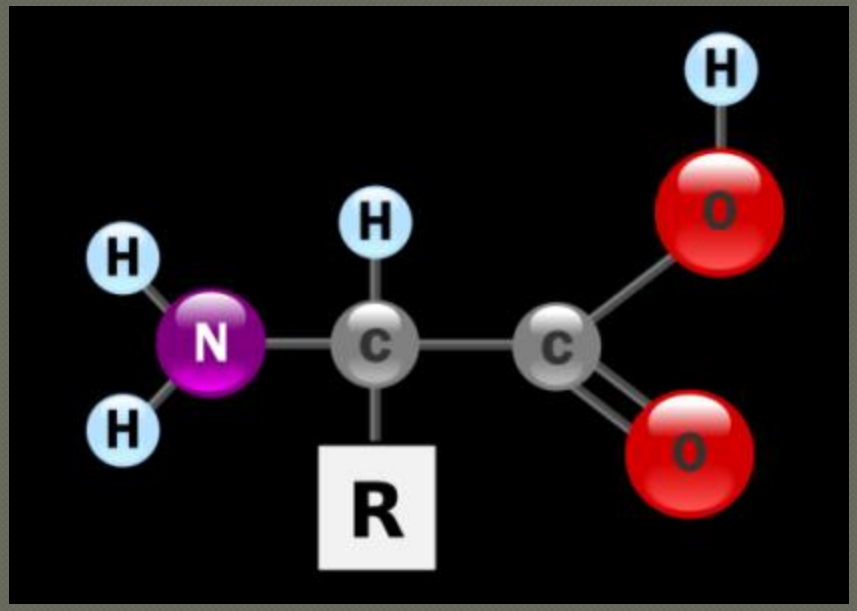
- A brown paper bag tests for lipids. A positive test result creates a transparent stain. A negative test result will show the liquid dries.

Question 16

- What are the building blocks of a protein?

Question 16

- Amino Acids

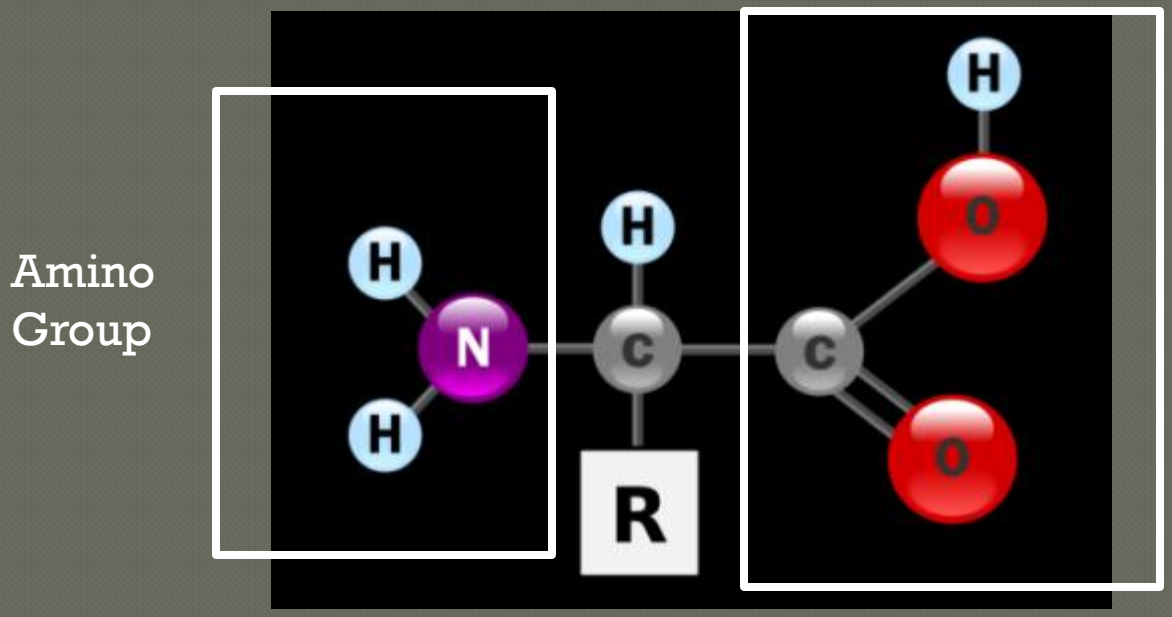


Question 17

- What are the special groups on an amino acid?

Answer 17

- One of the best ways to spot a protein is to look for the special groups. The special groups are the amino acid group NH_2 and the carboxyl group COOH.



Question 18

- What does Iodine test for?
- What does a positive test result look like?

Answer 18

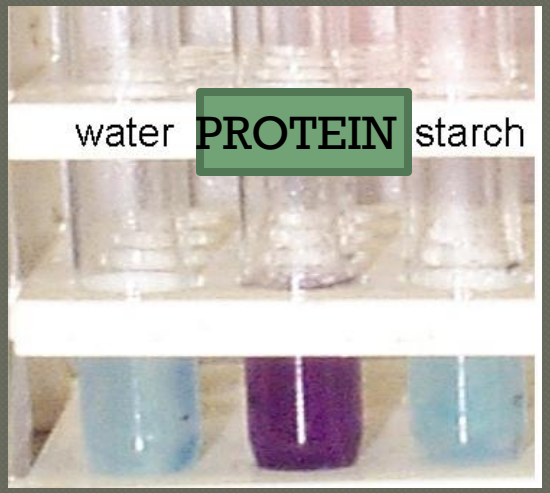
- Iodine tests for polysaccharides
- A positive test result is a dark purple/black color.
- Iodine normally has a yellowish tint so that is the negative test result.

Question 19

- What does Biuret test for?
- What does a positive test look like?

Answer 19

- Biuret's tests for protein.
- A positive test result turns a lavender color.
- A negative test remains a light blue/clear color

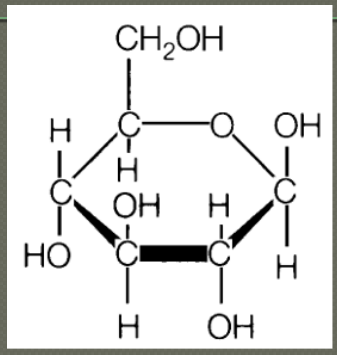


Question 20

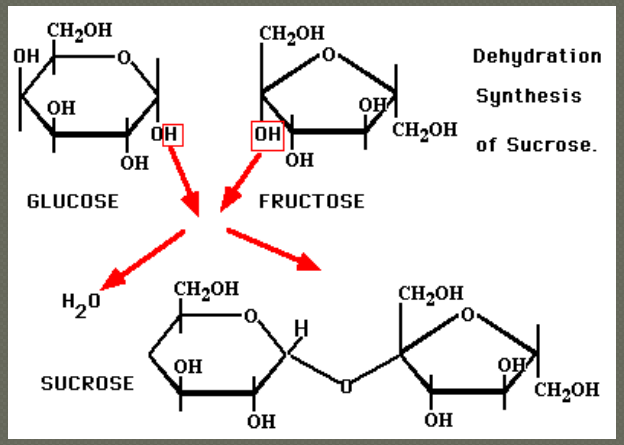
- Define the following:
- Monosaccharide
- Disaccharide
- Polysaccharide

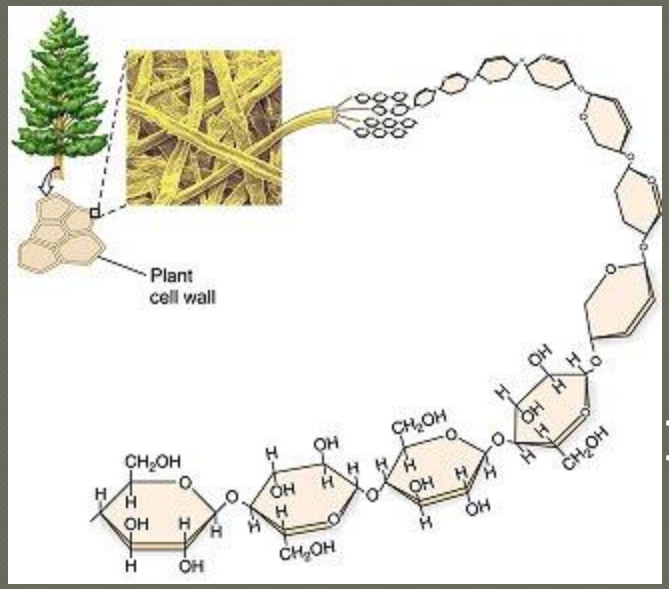
Answer 20

- Monosaccharide: One sugar



- Disaccharide: two sugars





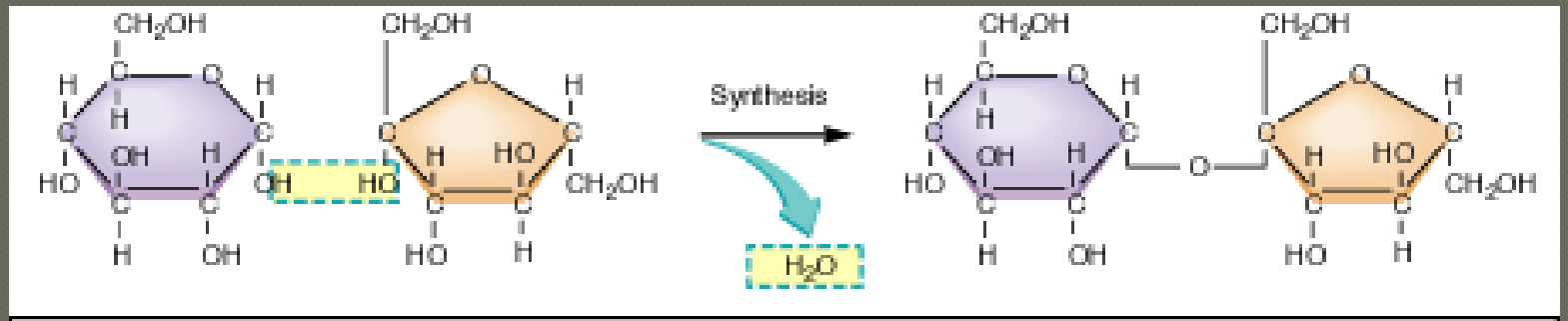
Polysaccharides: three or more sugars

Question 22

- What is the process called when two monosaccharides are put together?

Answer 22

- This process is called dehydration synthesis. In order to put two monosaccharides (or monomers) together you have to take out a water molecule.



Glucose	+	Fructose	→	yields 1 molecule of water	+	Sucrose
monosaccharide	+	monosaccharide	→	H_2O	+	disaccharide

Question 23

- How do living organisms use carbohydrates?

Answer 23

- Carbohydrates are our primary source of energy

Question 24

- How do living organisms use lipids?

Answer 24

- Living organisms use lipids to store energy that they don't use right away. This can create insulation for them. Additionally lipids are found in the cell membrane of every cell.

Questions 25

- What are two ways living organisms use proteins?

Answer 25

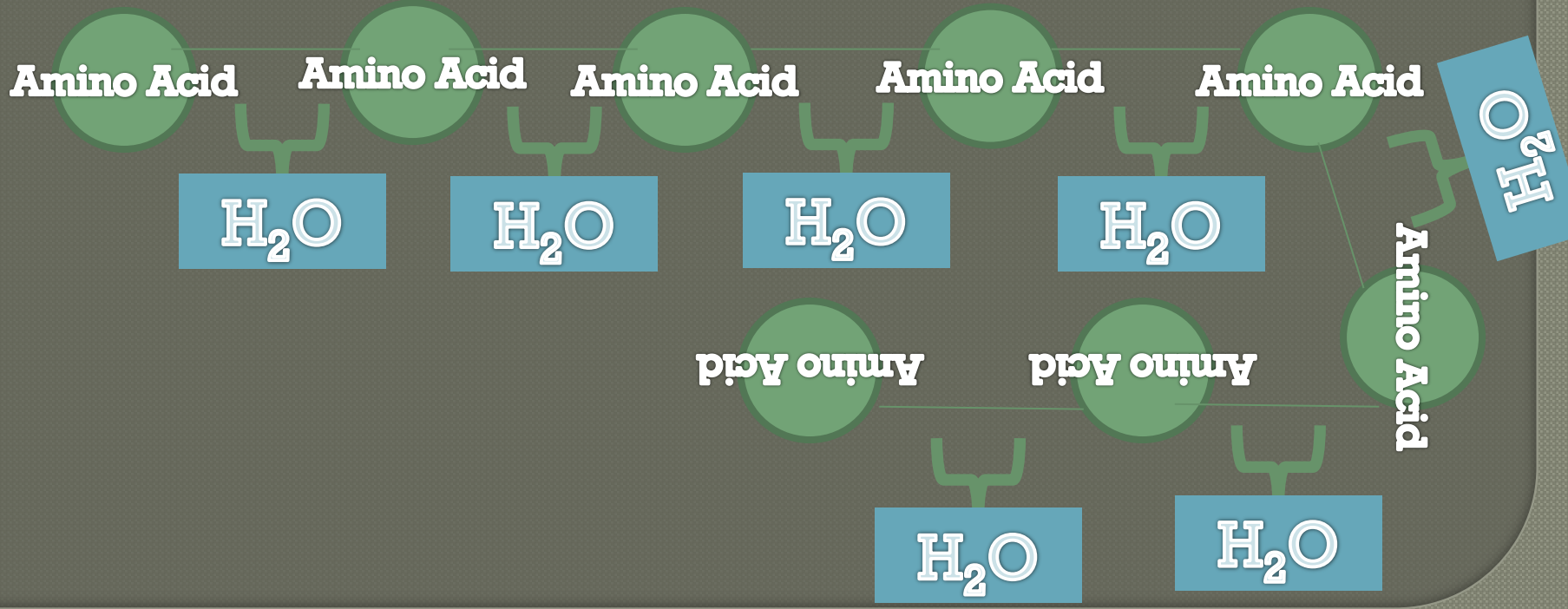
- Living organisms use proteins in the following five ways:
  - Structure and support
  - Enzymes: Speed up Reactions
  - Transport
  - Defense (antibodies)
  - Hormones (cell signals)

Question 26

- If I put 8 amino acids together how many water molecules would come out?

Question 26

- You would take out 7 waters and have a protein



Questions 27

- What would happen if I tested a polysaccharide with Benedicts?

Answer 27

- It would show a negative test result and remain blue. See above picture for a negative test result

Question 28

- How can you tell if something is an organic molecule?

Answer 28

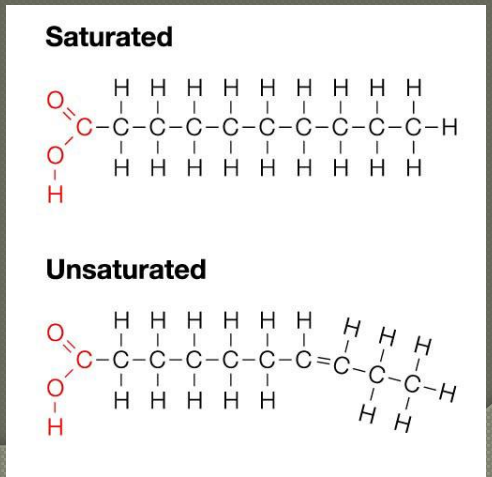
- It has Carbon and it is not CO_2

Question 29

- What are two differences between saturated and unsaturated fatty acids?

Answer 29

- Saturated Fats:
  - All Carbons have as many Hydrogens as possible
  - Solid at room temperature
  - Straight
  - Bad for you
- Unsaturated Fats:
  - The Carbons do not have as many Hydrogens as possible and create double and triple bonds with each other.
  - Liquid at room temperature
  - Kinked
  - Better for you



Question 30

- What does it mean that water has a high specific heat?

Answer 30

- It means that it takes A LOT of energy to change the temperature of water. Since you are made up of mostly water this means that it is very difficult for you to change temperatures…which is important for homeostasis.