ARE YOU READY FOR THE TEST ACTIVITY CH 2,3

Explain the following:

1. What are the subatomic particles and their charges?
2. How covalent bonds form.
3. How ionic bonds form
4. What type of bonds are between the bases on a DNA molecule.
5. How two atoms can become polar.
6. List the bonds from weakest to strongest
7. **4 reasons why the physical properties of water is beneficial to life in some way.**
8. What pH ranges constitute an acid, base, or buffer?
9. What two molecules must be present in an organic molecule
10. What are the building blocks of polysaccharides and how they bond together.
11. What fatty acids are (describe them)
12. What the atomic number of magnesium is and how many electrons are in the outermost shell.
13. **What is the importance of carbon and what biochemical compounds is it included in?**
14. What something that has a molecular formula of $C_4H_8O_4$ is
15. A monomer of a organic molecule that has a Nitrogen in it
16. The difference between glycogen and cellulose
17. The main functions of glycogen, cellulose and starch.
18. Describe a lipid
19. What makes up the sides and rungs of a nucleic acid molecule
20. The difference between a saturated and unsaturated fat
21. Describe how the phospholipids are arranged in a membrane.
22. Draw an atom of Sodium using the Bohr model
23. What the 3 parts of a nucleotide are
24. The difference between RNA and DNA
25. What type of bond does the bases of nucleotides form with each other.
26. What type of organic molecule is an enzyme
27. What is the monomer of a protein.
28. What type of amino side chain would you expect to find in water rich environment

29. Draw the structure of an amino acid
30. What is the importance of a functional group?
31. **What are the four types of structure of a polypeptide and how they bind together.**
32. What is a chaperone protein?
33. What atoms of the same element that have a different number of neutrons are called
34. What molecules that have the same molecular formula but a different structural formula are called
35. What are molecules that tend to resist changes in pH called
36. What the pH of a solution would be if it was a pH of 8 and you increased the number of H_3O^+ ions 1000 times.
37. How monomers of Macromolecules of life are joined and broken down.

*Be sure to know the monomers, polymers, and functions of each biochemical molecule.

Answers

1. Proton- positive charge, electron- negative charge, neutron- no charge
2. They share electrons
3. They transfer electrons
4. Hydrogen bonds
5. They have different electronegativites
6. Hydrogen bonds, ionic bonds, covalent bonds
7. Cohesiveness – Transpiration, High heat capacity- help maintain homeostasis when temperatures change and High heat of evaporation – Temperature moderation, Ice Floats – Hydrogen Bonds form, Good solvent – polar molecule disassociates ions.
8. Acid- 1-6; buffer - 7, base (alkaline)- 8-14
9. Carbon and oxygen
10. Monsaccharides are simple sugars like glucose and are linked by glycosidic linkages
11. Carboylic acids with long hydrocarbon tails
12. 12, 2
13. Carbon can form four covalent bonds, carbon to carbon bonds are very stable, can all structures needed for biochemical molecules. Biochemical molecules: proteins, carbohydrates, nucleic acids, and lipids.
14. It's a sugar
15. Is an amino acid
16. Glycogen is highly branched in animals, cellulose is unbranched (linear) in plants.
17. Glycogen – animals store glucose, Starch – plants store energy, cellulose – provides mechanical strength to plant cell walls.
18. Insoluable in water, stores energy, hydrophobic, important in cell membranes, nonpolar.
19. Sides – sugars and phosphates, Rungs – Nitrogen bases
20. Unsaturated – liquid at room temperature, has kinks, Saturated – solid at room temperature has no kinks because it's saturated with H.
21. Heads of the membrane are hydrophilic face outwards, tails of the phospholipid bilayer are hydrophobic and face inward.
22. Electron shells 2 in first, 8 in second and 1 in third energy level.
23. Sugar phosphate and a base
24. RNA has one strand, Uracil, Ribose. DNA has two strands, Thymine and Deoxyribose
25. Hydrogen

26. It's a protein
27. An amino acid
28. Hydrophilic
29. Check notes
30. The reactivity of the molecule is dependent on the function group.
31. Primary – peptide bonds, secondary – Hydrogen bonds, Tertiary – all bonds except covalent, Quarternary – Hbonds, Ionic Bonds, Nonpolar hydrophobic groups.
32. A protein that ensures the protein structure is folded correctly.
33. Isotopes
34. Isomers
35. Buffers
36. pH 5 – remember a Hydronium is an acid that will bring the pH down. Hydroxide (OH-) is a base that would bring the pH up.
37. Hydrolysis breaks polymers into monomers and needs water. Condensation builds monomers into polymers and takes a OH and a H away from the reactants which forms water.