

LSEP_1_T1_Revision exercise

1. Which of the following bonds join amino acids together in a polypeptide chain?
 - A. Disulphide bond
 - B. Glycosidic bond
 - C. Hydrogen bond
 - D. Peptide bond
 - E. Phosphodiester bond
2. How many single covalent bonds can a carbon atom form with other atoms?
 - A. One
 - B. Two
 - C. Three
 - D. Four
 - E. Five
3. Which of the following involves the breaking of covalent bonds in water molecules?
 - A. Absorption of heat
 - B. Autoionization into H^+ and OH^-
 - C. Display of strong surface tension
 - D. Solvation of salt
 - E. Vaporization at high temperature
4. Which of the following are secondary structures found in proteins?
 - A. Alpha-helix and beta-pleated sheet
 - B. Alpha-helix and double helix
 - C. Beta-helix and double helix
 - D. Beta-pleated sheet and double helix
 - E. Beta strand and beta-pleated sheet
5. What is the first level of protein structure?
 - A. Non-polar molecule
 - B. Polar molecule
 - C. Primary structure
 - D. Quaternary structure
 - E. Secondary structure
6. Which of the following involves the breaking of hydrogen bonds between water molecules?
 - A. Absorption of heat
 - B. Autoionization into H^+ and OH^-
 - C. Display of strong surface tension
 - D. Solvation of salt
 - E. Vaporization at high temperature
7. Which of the following correctly describes the quaternary structures in protein?
 - A. It refers to the alpha-helix and beta-pleated sheet structures held together by hydrogen bond.
 - B. It refers to the folding and bending of alpha-helix and beta-pleated sheet structures by forming covalent bonds.
 - C. It refers to the interaction of polypeptide subunits to form the final structure of the protein.
 - D. It refers to the interaction between alpha-helix and beta-pleated sheet structures to form the final structure of the protein.
 - E. It refers to the sequence of amino acids linked together by peptide bonds.

8. Which of the following is a monosaccharide?
- A. Cellulose
 - B. Glycogen
 - C. Glucose
 - D. Lactose
 - E. Sucrose
9. Which of the following is a disaccharide?
- A. Fructose
 - B. Galactose
 - C. Glucose
 - D. Lactose
 - E. Ribose
10. Which of the following best describe polar molecule?
- A. It is uncharged.
 - B. It carries negative charge.
 - C. It carries positive charge.
 - D. It is has uneven charge (electron) distribution over the molecule.
 - E. It is uncharged and any charges present are evenly distributed over the molecule.
11. What is the name of the disaccharide made of glucose + fructose (table sugar)?
- A. Hexose
 - B. Lactose
 - C. Maltose
 - D. Pentose
 - E. Sucrose
12. Which of the following is a type of chemical bond that involves the sharing of a pair of electrons between two adjacent atoms in a molecule?
- A. Double covalent bond
 - B. Hydrogen bond
 - C. Hydrophobic force
 - D. Ionic bond
 - E. Single covalent bond
13. Which of the following is a type of chemical bond that involves transfer of an electron from an atom to another atom?
- A. Double covalent bond
 - B. Hydrogen bond
 - C. Hydrophobic force
 - D. Ionic bond
 - E. Single covalent bond
14. Which of the following macromolecules has the most diverse function in the body?
- A. Carbohydrates
 - B. Deoxyribonucleic acids
 - C. Lipids
 - D. Proteins
 - E. Ribonucleic acids
15. In a water molecule, the bond between oxygen and hydrogen atoms is
- A. a covalent bond.
 - B. a hydrogen bond.
 - C. a polar covalent bond.
 - D. a non-polar covalent bond.
 - E. an ionic bond.

16. Which of the followings are the FOUR most abundant chemical elements in our body?
- A. C, H, O, P
 - B. C, N, H, O
 - C. C, P, N, O
 - D. Ca, C, H, O
 - E. Na, C, H, O
17. Substances dissolved in a liquid are known as:
- A. Ions.
 - B. polymers.
 - C. solutes.
 - D. solutions.
 - E. solvents.
18. Which of the following molecules cannot be digested by our body?
- A. Cellulose
 - B. Collagen
 - C. Glycogen
 - D. Peptides
 - E. Triacylglycerol
19. Ionic bond is
- A. attraction force between atoms.
 - B. attraction force between ions of the same charge
 - C. attraction force between ions of the opposite charge.
 - D. attraction force between molecules.
 - E. repulsive force between molecules.
20. What is the name of the five carbon sugar found in DNA?
- A. Deoxyribose
 - B. Hexose
 - C. Oxyribose
 - D. Polymer
 - E. Ribose
21. Which of the following biological molecules provides immediate chemical energy to power various cellular processes?
- A. Adenosine triphosphate
 - B. Fibrous protein
 - C. Globular protein
 - D. Glucose
 - E. Triacylglycerol

SAQ

1. Carbohydrates supply energy to body cells.
 - (a) What are the chemical elements that make up glucose?
 - (b) State one food that is rich in polysaccharides that can be digested and absorbed by the body.
 - (c) Name the enzyme that digests polysaccharides in our body.
 - (d) Which kind of polysaccharide found in food cannot be digested by our body?
 - (e) Excess glucose can be linked up to form larger carbohydrate molecules. Name this form of carbohydrate and indicate where it is stored in the body.
 - (f) The body can only store limited amount of carbohydrates. When the limit is reached, excessive carbohydrates will be converted into another type of macromolecule for long term storage. Name this macromolecule. Briefly describe its structure and state where it is stored in the body.
2. Nucleic acids are formed by linking nucleotides through phosphodiester bonds.
 - (a) What atoms can be found in a nucleotide?
 - (b) Name the 3 components of a nucleotide.
 - (c) Name the 5 nitrogenous bases that are found in nucleic acids.
 - (d) Name the 2 types of nucleic acids.
 - (e) List 2 structural differences between the named nucleic acids.
3. Lipids are a diverse group of hydrophobic molecules, which includes fatty acids, triglycerols, phospholipids and steroids.
 - (a) State the function of each type of lipid.
 - (b) State the atoms found in each type of lipid.
 - (c) State 2 structural differences between triglycerols and phospholipids.
 - (d) What is the basic structure of fatty acid?
 - (e) Fatty acids are classified into saturated and non-saturated fatty acids. What is the structural difference between saturated and non-saturated fatty acids?
 - (f) Name the lipid molecule that all steroids are derived from.
4. Protein has the most diverse functions in the body.
 - (a) Name the monomer for building proteins and briefly describe its structure.
 - (b) Name the bond that joins the monomers together in protein.
 - (c) What is the primary structure of protein?
 - (d) State the TWO types of folding pattern in secondary structure of protein and name the attraction forces that hold the structure in place.
 - (e) What are the attraction forces that contribute to the final protein structure?