

Answers:

Chapter 2: Physiological chemistry and processes

1. Identify whether the following are properties of ionic bonds or covalent bonds.

Property	Ionic bond	Covalent bond
A strong bond		✓
A relatively weak bond	✓	
The bond involves the sharing of electrons		✓
The bond involves the donation of electrons	✓	
The bond between the atoms in sodium chloride	✓	
The bond between the atoms in a water molecule		✓
The commoner type of atomic bond		✓

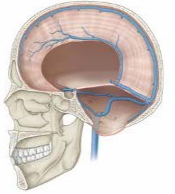
2. Identify whether the following are properties of electrons, neutrons or protons.

Property	Electron	Neutron	Proton
Negatively charged	✓		
Carries no charge		✓	
Found outside the atomic nucleus	✓		
Possesses negligible mass	✓		
Isotopes of an element vary in their number of these		✓	
The number of these corresponds to the atomic number of the atom			✓
Shared in the formation of covalent bonds	✓		

3. Fill in the blanks to complete the paragraph on DNA.

DNA is a double stranded molecule composed of units called **nucleotides**. The sugar in DNA is **deoxyribose**, and these sugar units alternate with **phosphate** to form the backbone of the molecule. DNA is tightly coiled in the cell **nucleus** to form structures called **chromosomes**. The functional units of these structures are the **genes**. The information carried in DNA is in the form of a code, written in the sequence of **bases** that pair to link the two strands together. These linking pairs are very specific: for instance, adenine pairs only with **thymine**.





4. Which of the following molecule types include the enzymes?

- Protein

5. The region on an enzyme molecule to which the reactants bind is called the: ____.

- active site

6. Which of the following is true about a catabolic reaction?

- The substrate is broken down into smaller products.

Correct Answer feedback: Catabolic reactions in the body include the action of digestive enzymes on large molecular weight foodstuffs, and the breaking down of blood clots.

7. Which of the following is true about enzyme action?

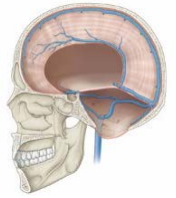
- Enzyme activity is very dependent upon a stable pH and temperature.

8. Enter a tick in the appropriate column to indicate whether the following apply to osmosis, diffusion or both.

Statement	Osmosis	Diffusion	Both
Movement of water molecules down their concentration gradient	✓		
Spreading of molecules in gases or solutions to reach an even distribution		✓	
Requires a semi-permeable membrane	✓		
Passive, that is requires no energy			✓
Molecules move down their concentration gradient			✓
The net movement of molecules stops once equilibrium is reached			✓



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9. Enter a tick in the appropriate column to indicate whether the following substances are associated with an intracellular compartment or an extracellular compartment.

Substance	Intracellular compartment	Extracellular compartment
Potassium	✓	
Cytoplasm	✓	
Lymph		✓
ATP	✓	
Synovial (joint) fluid		✓
Gastric juice		✓
Sodium		✓

10. Substances that accept hydrogen ions are called: ____.

- bases

11. The approximate pH of gastric fluid is: ____.

- 2

12. Which of the following is not one of the major groups of organic substances in the human body?

- Salts

13. The basic building blocks of fats are: ____.

- fatty acids and glycerol



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