Weekly Home Work
2nd Week

الإدارة المركزية للتعليم العام
إدارة تنمية مادة العلوم

2026

1st Secondary
First Term

Integrated Sciences

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Chapter (1) Lesson (2) The chemical properties of water

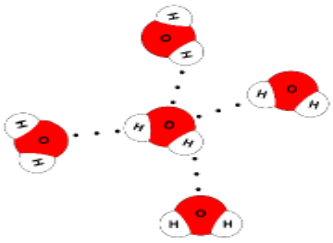
First: Choose the correct answer

1) What are the two essential elements that make up a water molecule?

A. Carbon and hydrogen
B. Nitrogen and oxygen
C. Oxygen and hydrogen
D. Chlorine and sodium

2) In the opposite figure what is the type of bond?

choice	In the water molecule	between water molecules
A	Covalent	Hydrogen
B	Covalent	Covalent
C	Hydrogen	Covalent
D	Hydrogen	Hydrogen



3) What type of bonds that connect water molecules?

A. Ionic bond
B. Hydrogen bond
C. Covalent bond
D. Metallic bond

4) Which element represents the largest proportion of the mass of a water molecule?

A. Hydrogen
B. Oxygen
C. Both are equal
D. Cannot be determined

5) Water is a polar compound because:

A. The electronegativity of oxygen is greater than the electronegativity of hydrogen.
B. The electronegativity of hydrogen is greater than the electronegativity of oxygen.
C. Oxygen carries a partial positive charge; hydrogen carries a partial negative charge.
D. Oxygen carries a partial negative charge; hydrogen carries a partial positive charge.

6) The hydrolysis of ammonium bicarbonate:

	Hydrogen ions concentration	Hydroxide ions concentration	The relation between $(H^+),(OH^-)$	pH	The acid type	The base type
A	decreases	decreases	$[H^+] < [OH^-]$	More 7	weak	weak
B	doesn't change	doesn't change	$[H^+] = [OH^-]$	Equal to 7	weak	weak
C	increases	decreases	$[H^+] > [OH^-]$	Less 7	strong	weak
D	decreases	increases	$[H^+] < [OH^-]$	More 7	weak	strong

7) The hydrolysis of sodium bicarbonate:

	Hydrogen ions concentration	Hydroxide ions concentration	The relation between $(H^+),(OH^-)$	pH	The acid type	The base type
A	decreases	decreases	$[H^+] < [OH^-]$	More 7	weak	weak
B	doesn't change	doesn't change	$[H^+] = [OH^-]$	Equal to 7	strong	strong
C	increases	decreases	$[H^+] > [OH^-]$	Less 7	strong	weak
D	decreases	increases	$[H^+] < [OH^-]$	More 7	weak	strong

8) Which of the following salts its hydrolysis produces an acidic solution?

A. Sodium chloride
B. Sodium bicarbonate
C. Ammonium chloride
D. Ammonium acetate

9) The following chemical equation represents the hydrolysis of the salt (WZ)

$$WZ_{(s)} + H_2O_{(l)} \longrightarrow WOH_{(aq)} + H^+_{(aq)} + Z^-_{(aq)}$$

Which of the following represents the PH value of the solution?

A. 12 **B.** 9 **C.** 7 **D.** 4

Second: Essay Questions

1| Give Reason:

1) Dissolving table salt in water

2) The solution resulting from the hydrolysis of ammonium bicarbonate in water is neutral.

3) The solution resulting from the hydrolysis of ammonium chloride salt in water is acidic.

2] Write the scientific term:

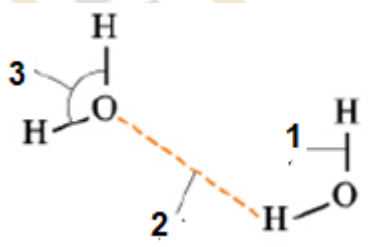
(1) A continuous change between the three states of water on the Earth's surface through a nearly closed system.	
2) The process by which a plant gets rid of water through the stomata.	
3) A scale that expresses the acidity or basicity of water.	
4) A scale in which values range from zero to 14.	
(5) A solution in which the concentration of hydrogen ions is equal to the concentration of hydroxide ions.	
(6) A solution in which the concentration of hydrogen ions is less than the concentration of hydroxide ions.	
(7) A solution in which the concentration of hydrogen ions is greater than the concentration of hydroxide ions.	

3] The figure shows two water molecules

(1) What are the type of the bonds (1) and (2)?

(2) What is the value of the angle (3)?

(3) Indicate the number of the bond that leads to increasing the boiling point of water



4] Compare between the hydrolysis of (sodium bicarbonate , ammonium bicarbonate and ammonium chloride) concerning the following:-

(1) pH value of the solution

(2) The relation between the concentration of $[H^+]$ and $[OH^-]$

(3) The type of the solution

(4) The chemical equation

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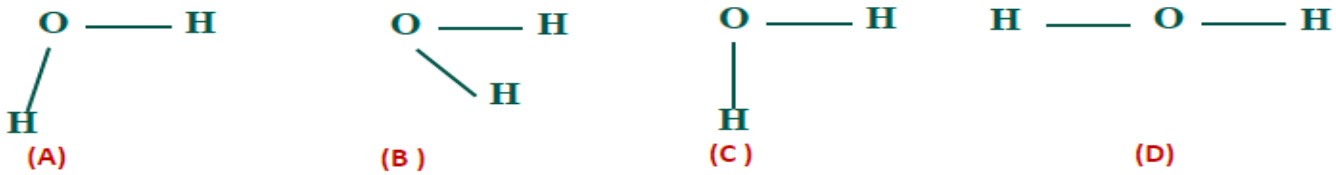
Chapter (1) Lesson (2) The chemical properties of water

First : Choose the correct answer

1) Which of the following diagrams correctly represents the structure of a water molecule and the angle between the two covalent bonds in it?



2) What type of chemical bonds connect the hydrogen and oxygen atoms in a water molecule?

A. Ionic bond
B. Hydrogen bond
C. Covalent bond
D. Metallic bond

3) What is the approximate value of the angle between the covalent bonds in a water molecule?

A. 75.5°
B. 90°
C. 100°
D. 104.5°

4) Which of the following expressions is correct in a water molecule?

A. the percentage of Hydrogen mass is 66.67%
B. the percentage of Oxygen mass is 33.33%
C. the percentage of Hydrogen mass is 11.11%
D. the percentage of Oxygen mass is 66.67%

5) All of the following are consequences of the polarity of the water molecule except:

A. Water molecules are linked together by hydrogen bonds.
B. The ability to dissolve many mineral salts.
C. The boiling point of water rises to 100 C
D. The ability to dissolve a non-polar organic compound.

6) The hydrolysis of ammonium chloride:

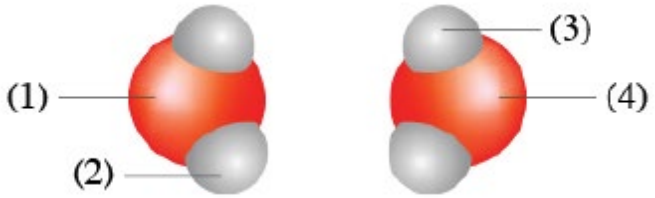
	Hydrogen ions concentration	Hydroxyl ions concentration	The relation between $(H^+),(OH^-)$	pH	The acid type	The base type
A	decreases	decreases	$[H^+] < [OH^-]$	More 7	weak	weak
B	doesn't change	doesn't change	$[H^+] = [OH^-]$	Equal to 7	strong	strong
C	increases	decreases	$[H^+] > [OH^-]$	Less 7	strong	weak
D	decreases	increases	$[H^+] < [OH^-]$	More 7	weak	strong

7) The solution resulting from the hydrolysis of sodium bicarbonate is basic because:

A. the concentration of $[H^+]$ is less than the concentration of $[OH^-]$
B. the concentration of $[H^+]$ is more than the concentration of $[OH^-]$
C. the concentration of $[H^+]$ is equal to the concentration of $[OH^-]$
D. the concentration of $[H^+]$ is equal to or less than the concentration of $[OH^-]$

8) The figure shows two water molecules, the hydrogen bond is formed between….

A. (1) , (2) **B.** (2) , (3)
C. (2) , (4) **D.** (1) , (4)



9) The following chemical equation represents the hydrolysis of the salt (WZ)

$$WZ_{(s)} + H_2O_{(l)} \longrightarrow HZ_{(aq)} + OH^-_{(aq)} + W^+_{(aq)}$$

Which of the following represents the pH value of the solution?

A. 8 **B.** 7 **C.** 6 **D.** 5

Second : Essay Questions

1] Give Reason:

(1) Water is a polar solvent.

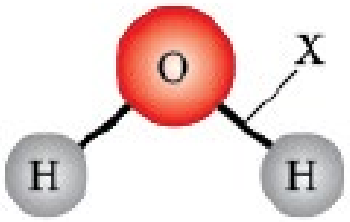
2) The boiling point of water is high, even though it is a covalent compound.

3) The solution resulting from the hydrolysis of sodium bicarbonate salt in water is alkaline.

2] What happen if:

1) Hydrolysis ammonium bicarbonate in water (in term of H^+ conc and OH^- conc)	
2) Hydrolysis sodium bicarbonate in water (in term of H^+ conc and OH^- conc)	
3) Hydrolysis ammonium chloride in water (in term of H^+ conc and OH^- conc)	

3] The figure shows the water molecule



(1) What is the type of the bond (X)?

(2) Indicate on the figure the partial positive charge and the partial negative charge

4] Compare between the hydrolysis of (sodium bicarbonate) and (ammonium bicarbonate) concerning the following: -

(1) pH value of the solution

(2) The relation between the concentration of $[H^+]$ and $[OH^-]$

(3) The type of the solution

(4) The chemical equation