

الواجب المنزلي
الأسبوع الرابع

الإدارة المركزية للتعليم العام
مكتب تنمية مادة العلوم



2026

الصف الأول الثانوي
الفصل الدراسي الأول

العلوم المنتكاملة

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Ch (1) Lesson 4: Aqueous Solutions and Their Properties

First: Choose the correct answer: -

1 - If pure water freezes at 0°C , so dissolving amount of salt in water causing its freezing point will be

A- less than 0°C

B- equal to 0°C

C- greater than 0°C

D- between 0°C and 4°C

2- Two liquids X and Y are separated by a semipermeable membrane. If the boiling point of X > boiling point of Y, then water...

a) moves from liquid X to liquid Y.

b) remains stationary in both liquids.

c) moves from liquid Y to liquid X.

d) moves between both liquids at the same rate.

3- Colligative properties of a solution...

a) Depend only on the type of solute.

b) Depend only on the type of solvent.

c) Depend on both the type and concentration of the solute.

d) Depend on the concentration of solute, not its type.

4- If the boiling point of water at the base of a mountain is 100°C , its boiling point at the top of the mountain is...

d) 95°C

c) 373 K

b) 120°C

d) 0 K

5- As the freezing point of a solution increases, its osmotic pressure...

A- increases

C- does not change

B- decreases

D- becomes zero

6- If atmospheric pressure = 1 atm, the boiling point of a liquid at 0.8 atm pressure is..... that at 1 atm.

- A- equal to
 C- higher than
B- lower than
 D- Any of the above

7- Decreasing which of the following leads to increase the vapor pressure of a solution?

- A- Number of solvent molecules
B- Number of solute particles
 C- Temperature
 D- Boiling point

Solution	The amount of dissolved table salt
X	50 g
Y	10 g
Z	80 g

8- Three aqueous solutions of equal volume X, Y, and Z, each containing different amounts of sodium chloride, as shown in the opposite table.

The correct order of the freezing points of T_x , T_y , and T_z is

- a) $T_x > T_y > T_z$
 b) $T_x = T_y = T_z$
 c) $T_y > T_x > T_z$
 d) $T_y < T_x < T_z$

9- Dissolving table salt in distilled water, so the osmotic pressure of the solution

- A- increases
 B- decreases
 C- becomes zero
 D- remains constant

10- When a water sample is left exposed to the atmospheric air, then part of water is evaporated, so its boiling point

- A- decreases
 C- increases
 B- becomes zero
 D- does not change



11- Salt is sprinkled on roads in frozen areas after snowfall

- A. To lower the melting point of ice
- B. To raise the melting point of ice
- C. To reduce the amount of evaporation
- D. To reduce the vapor pressure produced by water

12- The decrease in freezing point isproportional to number of solute particles, while increase in boiling point is proportional to solution concentration

- A- direct / direct
- B- direct / inversely
- C- inversely / inversely
- D- inversely / direct

Second: Essay Questions:

1- Define vapor pressure of a solution.

The pressure of vapor when the liquid and vapor are in dynamic equilibrium at a certain temperature.

2- What happens to boiling point of an aqueous solution when going up a mountain, and why?

The boiling point decreases on a mountain because atmospheric pressure decreases with altitude

3- Give reasons for:

Pure water evaporates faster than aqueous solutions.

Because solute particles attract water molecules and reduce their ability to escape into vapor.

العلوم المتكاملة

2025-2026

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Ch (1) Lesson 4: Aqueous Solutions and Their Properties

First: Choose the correct answer: -

1) What does the term " the concentration of solution " express?

- a) Total volume of solution
- b) Type of solute and solvent
- c) Amount of solute in a given volume of solvent
- d) Temperature of the solution

2) Which of the following is not an example of an aqueous solution?

- a) A solution of table salt in water
- b) Lemon juice
- c) Tea
- d) A mixture of sand and water

3) What is the effect of increasing the concentration of dissolved substances in water on its density?

- A) decreases.
- B) increases.
- C) does not change.
- D) changes randomly.



4) What is the main effect of adding solute to water; on its vapor pressure?

- a) decreases.
- b) increases.
- c) is not affected.
- d) increases then decreases.

5) Why are water molecules less likely to evaporate in solutions than in pure water?

- A) Because of the attractive forces between water molecules increases
- B) Because of the attractive forces between water molecules decreases
- C) Because of the attractive forces between water molecules and the solute increases
- D) Because of the attractive forces between water molecules and the solute decreases

6) What is the relationship between the number of solute molecules in a solution and its vapor pressure?

- A) Inverse relationship.
- B) Direct relationship.
- C) No relationship.
- D) Variable relationship.



12) If the boiling point of water at 1 atm pressure is 100°C , it is expected that its boiling point at 0.7 atm pressure equals.....

- a. 100°C b. 102°C c. 93°C d. 103°C

13) Which of the following factors doesn't affect the boiling point of solution?

- a. Volume of solution b. Density of solution
c. Atmospheric pressure d. Concentration of solution

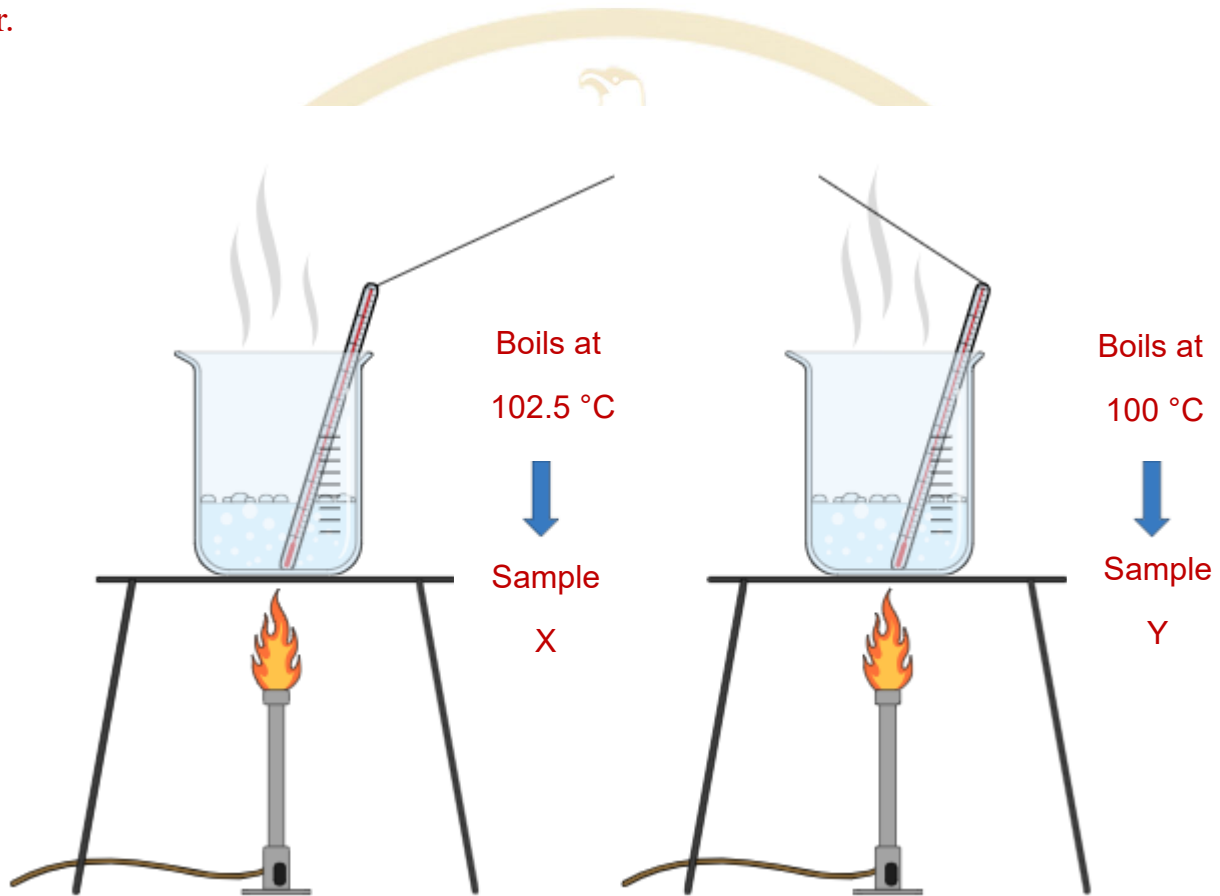
14) What is the effect of increasing the number of solute molecules in solution on the boiling point of the solution and its density?

	On the boiling point	On the density
<u>A</u>	increases	increases
B	decreases	decreases
C	decreases	increases
D	increases	decreases

Essay Questions

1) The figure shows two equal samples, one is pure water and the other is salt water.

When both are heated to boiling, sample X is observed to boil at $102.5\text{ }^{\circ}\text{C}$, while sample Y boils at $100\text{ }^{\circ}\text{C}$. Indicate with an explanation which sample is pure water and which is salt water.



Sample Y is pure water, and Sample X is salt water because dissolved salt raises the boiling point

2) Explain: The boiling point of a solution is higher than that of pure water at normal atmospheric pressure.

Adding solute reduces vapor pressure so a higher temperature is needed to boil

3) What is the effect of the increase in the concentration of the dissolved substances in the pure water on each of the following:

- 1- its density Increases
- 2- its boiling point Increases
- 3- its freezing point Decreases
- 4- its vapor pressure Decreases
- 5- the decrease in its vapor pressure Increases

4) Correct the underlined word(s):

- 1- The colligative properties of a solution depend on the type of the solute particles. ^{number}
- 2- The liquid vapor exerts a pressure on the surface of its liquid called the osmotic ^{vapour} pressure of the liquid.
- 3- The decrease in the liquid vapor pressure of a solution is inversely ^{directly} proportional to the number of solute molecules or ions in.
- 4- The freezing point of a solution is always equal to ^{less than} that of the pure water at normal atmospheric pressure.
- 5- The boiling point of a solution is equal to ^{more than} that of the pure water at normal atmospheric pressure.
- 6- A liquid boils when its vapor pressure is less than ^{equal to} that of atmospheric air pressure at the surface of the liquid.

5) The following data table shows: Three samples of equal masses of impure water

(X, Y, and Z) and the boiling point of each sample under the normal atmospheric pressure.

The sample	Its boiling point
Sample X	101.5 °C
Sample Y	100.5 °C
Sample Z	102.5 °C

Arrange the three samples in **ascending order** by the number of molecules dissolved in the water. Y, X, Z

6) The following data table shows: Three samples of equal masses of impure water (X, Y, and Z) and the boiling point of each sample under a different atmospheric pressure.

The sample	Its boiling point
Sample X	103 °C
Sample Y	98 °C
Sample Z	101 °C

Arrange the three samples in **ascending order** by the value of the acting atmospheric pressure. Y, Z, X