

شكراً لتحميلك هذا الملف من موقع المناهج الإماراتية



حل مراجعة أسئلة وفق الهيكل الوزاري نخبة انسباير

موقع المناهج ← المناهج الإماراتية ← الصف الثامن ← علوم ← الفصل الثالث ← الملف

التواصل الاجتماعي بحسب الصف الثامن



روابط مواد الصف الثامن على تلغرام

[الرياضيات](#)

[اللغة الانجليزية](#)

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المزيد من الملفات بحسب الصف الثامن والمادة علوم في الفصل الثالث

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1- State the law of conservation of mass.

2- What evidence would you observe if the law of conservation of mass is obeyed when mixing two solutions?

Ans:

According to law of conservation of mass the total mass of the products always equal the total mass of the reactants.



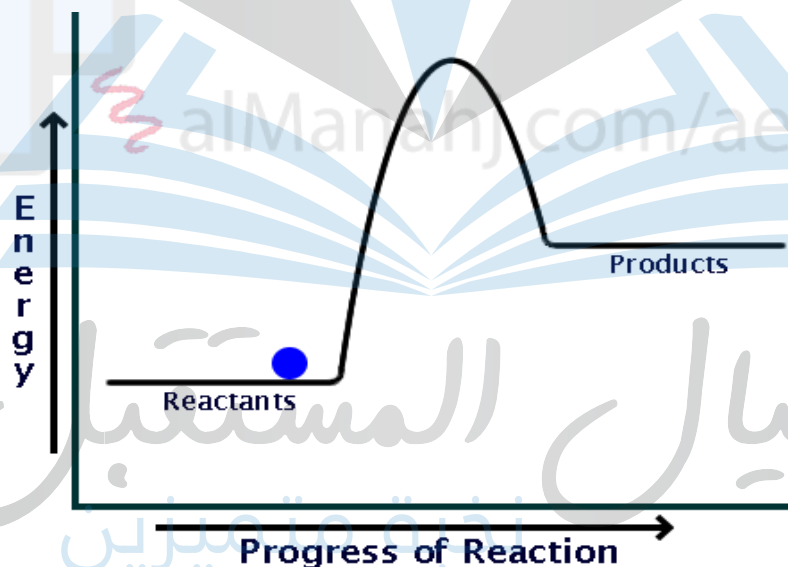
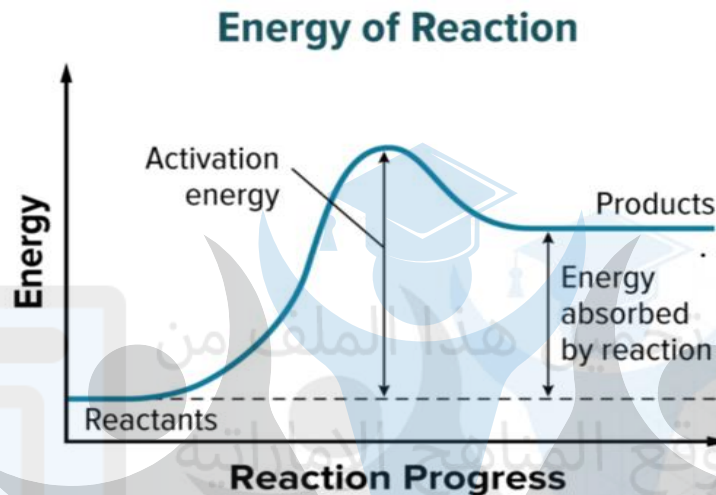
↳ MASS SHOULD STAY THE SAME

Reactant Mass = Product Mass

3- What is an endothermic reaction

- ✓ When the energy needed to keep an endergonic reaction going is in the form of thermal energy,

(Absorb Of Thermal Energy "heat")

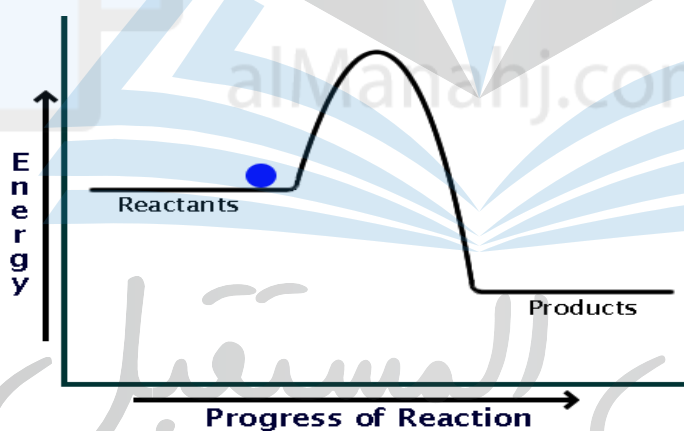
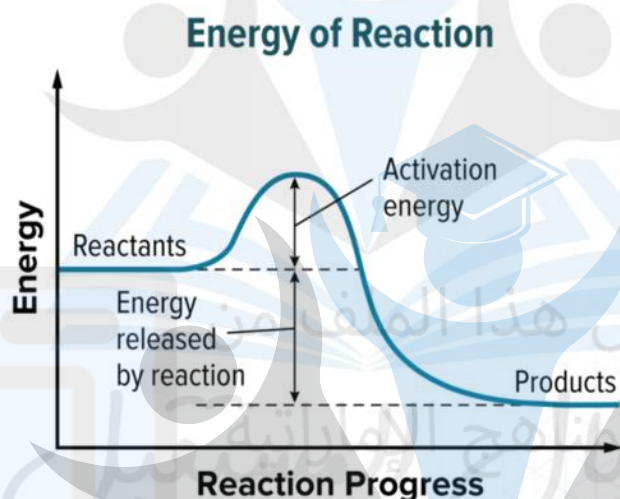


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the temperature (energy) of the products is higher than the temperature of the reactants .

4- What is an exothermic reaction?

- ✓ exothermic reaction : When the energy of an exergonic reaction is given off mostly in the form of thermal energy (release Of thermal Energy (heat) with the product)



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the temperature (energy) of the reactants is higher than the temperature of the products .

5- What is the difference between chemical properties and physical properties?

6- Give examples of physical properties/ chemical properties

Ans:

physical property :is a characteristic of a substance that can be observed or measured **without changing the identity** of the substance.

Examples of physical properties include:

boiling point, melting point, freezing point, volume , density texture, color, odor, shape, solubility

Chemical properties: are properties that can be observed or measured when a substance undergoes a chemical change (**A change from one substance to new substance**)

Examples of chemical properties :

- Compressibility, radioactivity, toxicity, flammability, heat of combustion, reactivity between chemicals,

7-What is solubility?

Ans:

Solubility: is the maximum amount of a solute that can be dissolved in a given amount of solvent at a given temperature.

Solubility is often expressed as grams of solute per 100 g of water.

8-What is conductivity?

Ans:

Conductivity is a measure of the ability of water to pass an electrical current.

Remember That □:

- ✓ **Electrolytes:** are compounds that produce ions in water. (electrolytes conduct electricity)
- ✓ **non electrolytes:** Substances that form no ions in water and do not conduct electricity

9-How do you define reactants and products in a chemical reaction?

Ans.

Reactants: The substances present at the beginning of the reaction

Reactants: the substances that react

Products: The new substances produced



Reactant: Before the Arrow

Product: After the Arrow

10-What is a chemical reaction?

Ans.

chemical reaction is a change in which one or more substances are converted into new substances.

11- Characterize each reaction by determining its reaction type.



(Synthesis reaction)



(Single displacement)



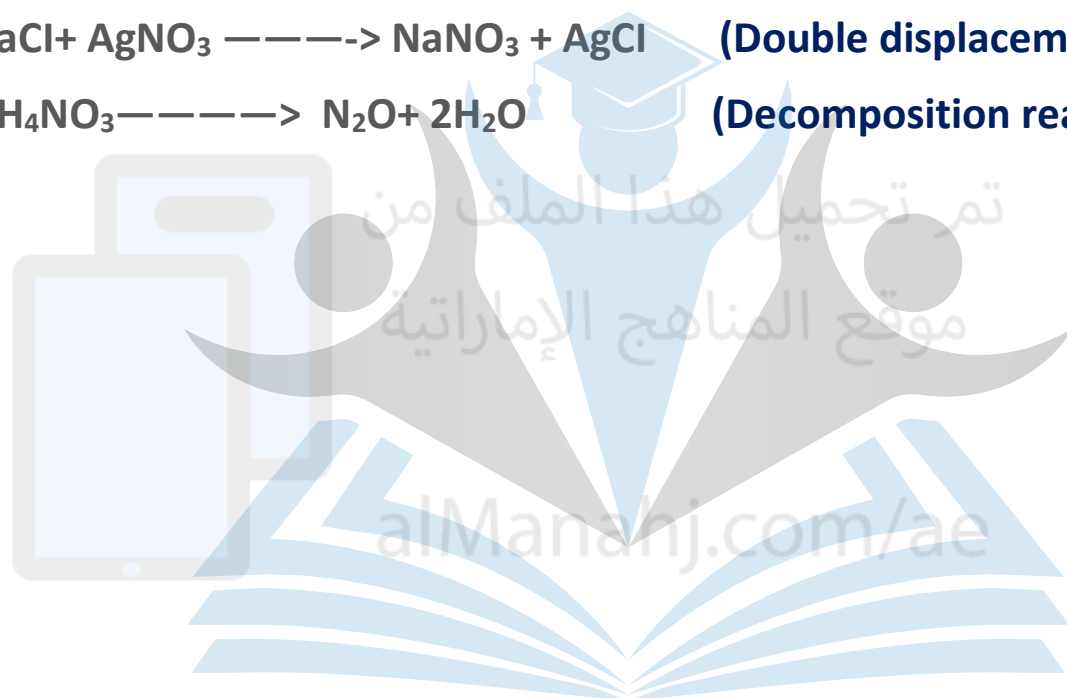
(combustion Reaction)



(Double displacement Reaction)



(Decomposition reaction)



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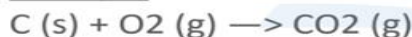
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Don't Forget ☐:

• combustion reaction

occurs when a substance reacts with oxygen to produce energy in the form of heat and light.

Example:



Note That 🙄:

In combustion reaction we find in

In the reactant: Oxygen(O₂)

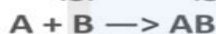
In the product: CO₂ OR Heat OR light

• synthesis reaction

(composition Reaction)

two or more substances combine to form another substance.

Example:



decomposition reaction

one substance breaks down into two or more substances.

Example:



single-displacement reaction

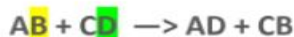
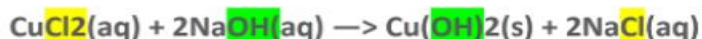
one element replaces another element in a compound.

Example:



double-displacement reaction

the positive ion of one compound replaces the positive ion of the other, forming two new compounds



12- Compare and contrast synthesis reactions and decomposition reactions.

- synthesis reaction

(composition Reaction)

two or more substances combine to form another substance.

Example:



decomposition reaction

one substance breaks down into two or more substances.

Example:



13- What kind of reaction produces a precipitate?

Ans.

Double displacement Reaction

Note That □:

Precipitate: an insoluble compound that comes out of solution during this type of reaction. (Solid Formed in the Product)



14- Describe what happens in a single displacement/ double displacement reaction?

single-displacement reaction

one element replaces another element in a compound.

Example:



double-displacement reaction

the positive ion of one compound replaces the positive ion of the other, forming two new compounds



Remember that :

Single displacement reaction where A metal will replace any less active metal.

15- Describe what happens in an oxidation-reduction reaction? Give examples of oxidation-reduction reactions.

16- Compare and contrast oxidation and reduction.

Ans.

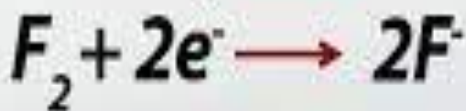
Oxidation is the loss of electrons.

Reduction is the gain of the lost electrons.

Note that □ :

Reduction and oxidation always work as a pair (in the Same time)

Example:



17- Describe how hydrogen ions are associated with both acids and bases

Ans.

- ✓ Solutions are classified as acidic or basic based on their hydrogen ion concentration relative to pure water.
- ✓ An acid is any substance that donates H^+ to a base.
- ✓ A base is any substance that accepts H^+ from acids.

Note that □:

Acidic solutions have a higher H^+ concentration in water while basic (alkaline) solutions have a lower H^+ concentration in water

18- Describe how an acidic solution forms when an acid is mixed in water and how a basic solution forms when a base is mixed in water?

- An acid is a substance that produces hydrogen ions (H^+) in a water solution.

An acid ionizes in water, producing hydronium ions

- A base is a substance that produces hydroxide ions (OH^-) when it is dissolved in water.

Also, a base is any substance that accepts H^+ from acids. In water, such bases dissociate, forming positive metal ions and hydroxide ions.

19- Explain how a reaction could be endothermic but not exothermic.

Ans.

- An exothermic process releases heat, causing the temperature of the immediate surroundings to rise.
- An endothermic process absorbs heat and cools the surroundings

Endothermic Reaction Examples

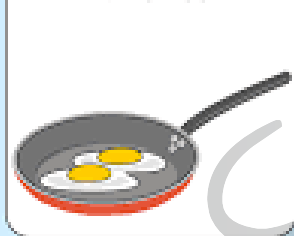
Evaporation of water



Baking bread



Frying Eggs

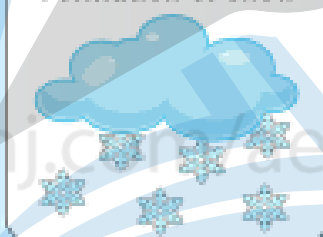


Photosynthesis



Exothermic Reaction Examples

Formation of snow



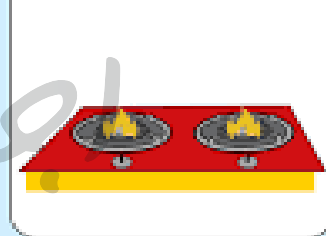
Burning candle



Burning wood



Gas burner in use



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20- Why is a log fire considered to be an exothermic reaction?

Ans.

Because The combustion of wood is an exothermic reaction that releases a lot of energy as heat

21- What is the energy required to start a chemical reaction called?

Ans.

Activation energy

22- Why do most of the chemical reactions need activation energy?

Ans.

- ✓ Because activation energy is the minimum amount of energy that make the reactant react to result in a chemical reaction.
- ✓ the energy required to start a chemical reaction

23- How do you know which substance is the solute in a solid solution?

Ans.

- ✓ When a solid or gas dissolves in a liquid, the solid or gas is the solute, and the liquid is the solvent.
- ✓ A solute is the material present in the smaller amount in the solution.

Note That □:

A solute: is a substance being dissolved. (the smaller quantity)

A solvent: is a substance in which a solute is dissolved. (larger quantity)

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24- What is an alloy?

Ans.

**Alloy: is a mixture of elements that has metallic properties.
(mix of two metals)**

Example:

- Sterling silver is an alloy of 92.5 percent silver (solvent) and 7.5 percent copper (solute).
- alloy of 99 percent gold (solvent) and 1 percent copper (solute)
- Alloy of 85 percent copper and 15 percent tin

25- Why does breaking up a solid solute into smaller pieces help it dissolve more quickly?

Ans.

Because Breaking a solute into smaller pieces increases its surface area and increases its rate of solution.

Remember that ☐:

- More surface area means that more solute comes in contact with the solvent. When the surface area of the solute increases, the solute dissolves more quickly

26- Describe how stirring, surface area and temperature affect the rate of dissolving

Ans.

The rate at which a solute dissolves into a solvent can be increased by:

- a) stirring
- b) increasing the surface area of the solute
- c) increasing the temperature of the solvent

Read that ☐:

a) Stirring a solution speeds up the dissolving process by making the solvent and solute particles move faster. More solvent particles come into contact with more solute particles. The solid solute dissolves more quickly.

b) When you break a solid solute into smaller pieces, you increase its surface area. More surface area means that more solute comes in contact with the solvent. When the surface area of the solute increases, the solute dissolves more quickly

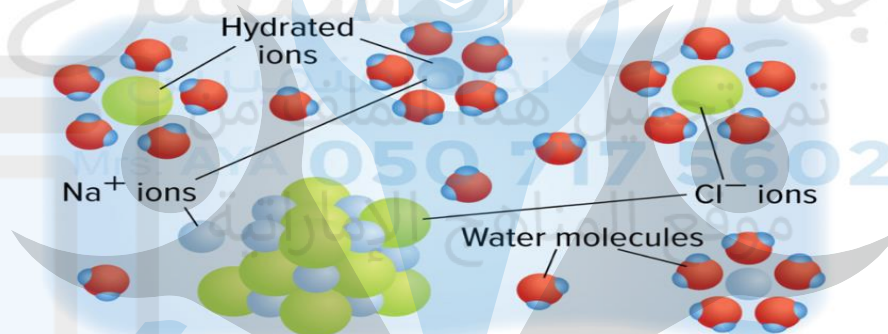
c) Solvent particles move faster when the temperature of the solvent increases. Fast-moving solvent particles have more chances to come in contact with solute particles. The more often they come in contact, the faster the solute particles break loose and dissolve.

27- Compare and contrast the differences and similarities between ionization and dissociation.

Ionization: is a process in which molecular compounds dissolve in water and separate into charged particles (ions)

Example: H₂O surrounds HCl molecules and pulls them apart to form H⁺ and Cl⁻ ions.

Dissociation: is a process in which positive and negative ions of an ionic solid mix with solvent to form a solution.



28- Describe the two ways that solutions of electrolytes form

Ans.

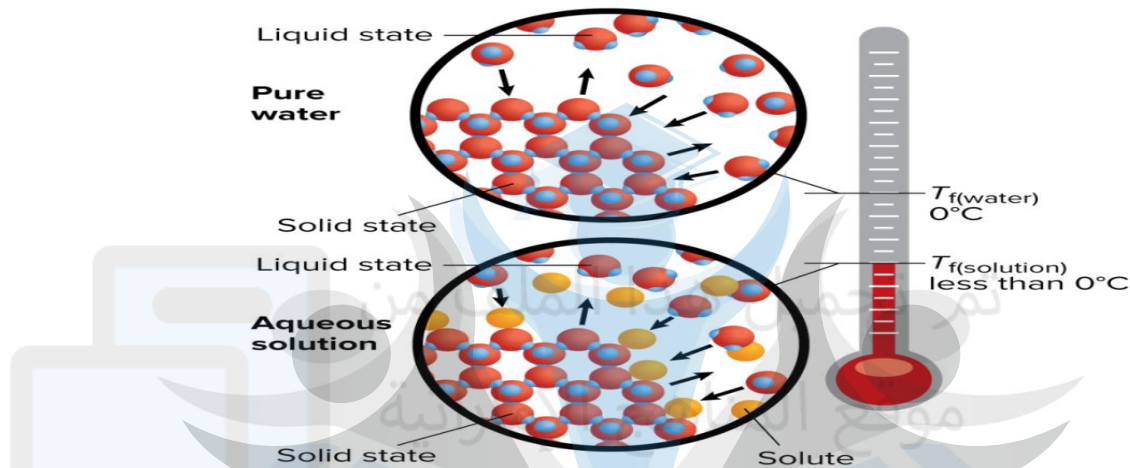
ionization and dissociation

- ✓ **Ionization** is a process in which molecular compounds dissolve in water and separate into charged particles (ions) (conversion of a substance into ions)
- ✓ **Dissociation** is a process of separation of charged particles which already exist in a compound.

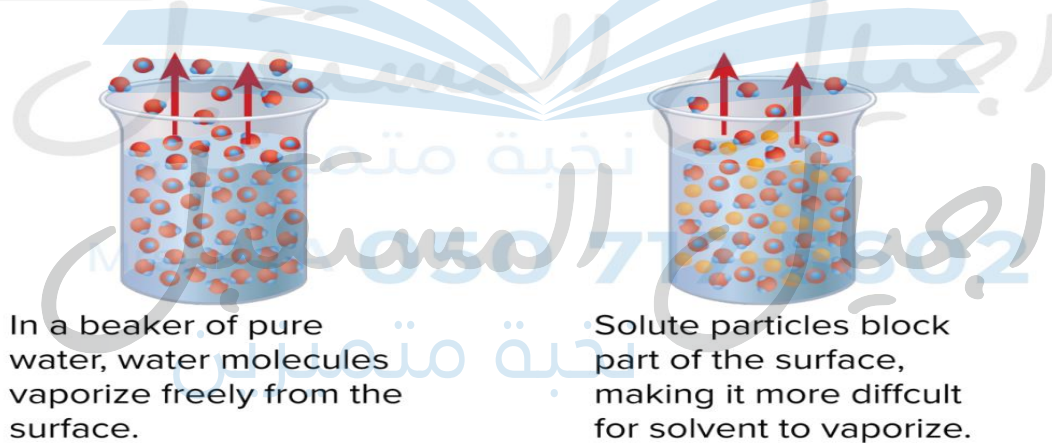
29- Explain how the concentration of a solute in a solution influences its boiling point and freezing point

- **Adding a solute to a solvent lowers the freezing point.**

The solute interferes with the arrangement of particles as the solid forms. Example: antifreeze



- **Adding a solute to a solvent raises the boiling point.**
Solute particles blocks the surface



In a beaker of pure water, water molecules vaporize freely from the surface.

Solute particles block part of the surface, making it more difficult for solvent to vaporize.

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30- Describe how antifreeze affect the vapor pressure of a pure solvent.

Ans.

Freezing point is the temperature at which vapor pressure of solution and liquid phase becomes equal.

Reason: On adding antifreeze, vapor pressure decreases so Freezing Point also decreases depression in Freezing Point.

Note That ☐:

- ✓ Antifreeze molecules added to the water block the formation of ice crystals.
- ✓ When enough solute particles are present, water cannot freeze at 0°C.
- ✓ Solute particles block part of the surface, so fewer water molecules can reach the surface and vaporize. The solution cannot boil because the vapor pressure of the solution is lower than the vapor pressure of the solvent. Energy must be added to overcome the interference and raise the vapor pressure of the solution to make it boil. The added energy means the solution boils at a temperature higher than the boiling of the pure water

31- Why is it dangerous to take large doses of some non polar vitamins?

Ans.

Some vitamins, such as vitamin A, are non polar. They dissolve in fat, which is also non polar.

They can accumulate to toxic levels in your body if you take too many.

Note That ☐:

Some vitamins, such as **vitamin A**, are non polar.

- They dissolve in fat, which is also non polar.
- They can accumulate to toxic levels in your body if you take too many.

Other vitamins, such as **vitamins B and C**, are polar molecules, so they dissolve in water.

They do not accumulate in tissue because excess vitamin is washed away by water in the body.

32- Why is it necessary to replace water-soluble vitamins more quickly than fat-soluble vitamins?

Ans.

- ✓ Because water-soluble vitamins cannot be stored in your body for very long, because excess of polar vitamins is washed away by water in the body.

33- Explain how a polar solvent dissolves a polar solute and how a nonpolar solvent dissolves a nonpolar solute?

Ans.

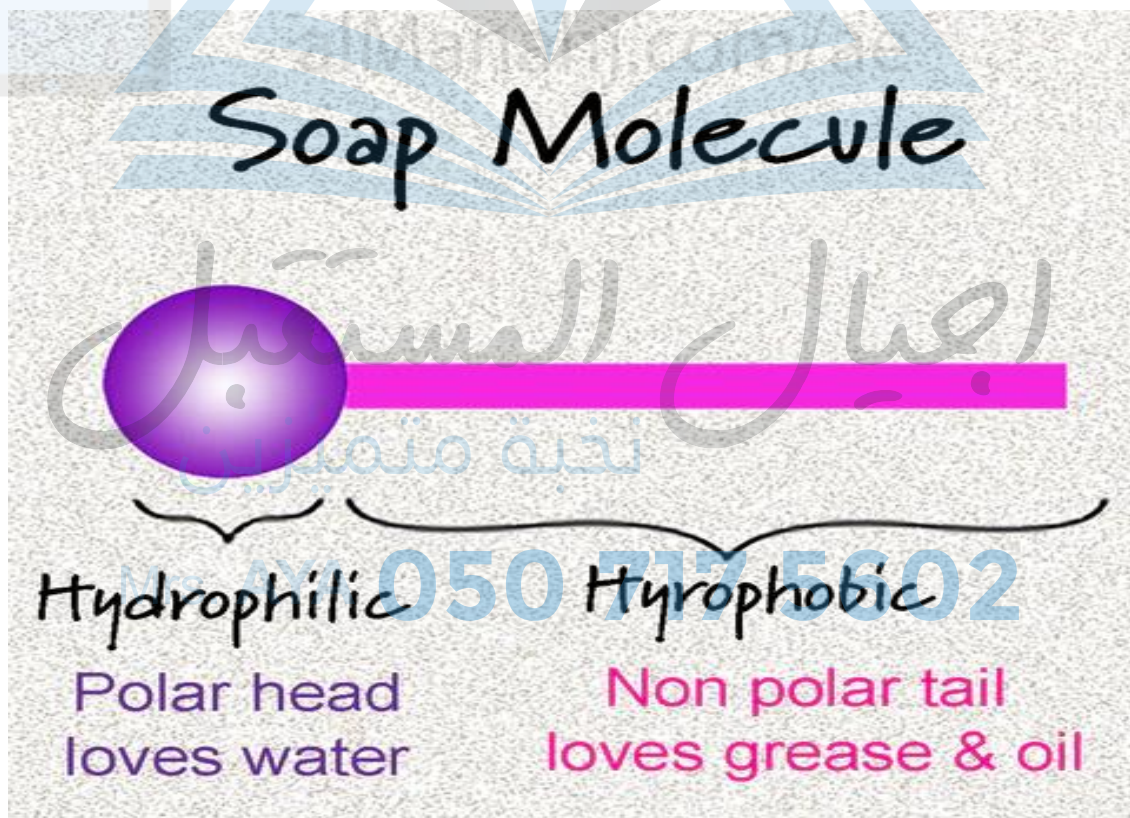
Polar solvents: will dissolve polar and ionic solutes because of the attraction of the opposite charges on the solvent and solute particles.

Non-polar solvents: will only dissolve non-polar solutes because they cannot attract the ions as they do not have positive and negative areas.

34- Explain how one solute can dissolve in both polar and non-polar solvents.

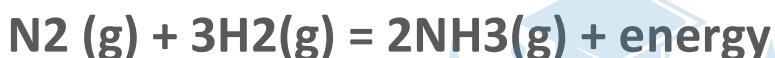
Ans.

- ✓ Some substances -such as soap and ethanol have a polar end and a non-polar end.
- ✓ The non-polar end of soap dissolves in non polar solvents (as oil),
- ✓ while the polar end of soap dissolves in polar solvents(as water).
- ✓ This allows one solute to dissolve in both polar and non polar



35- Identify and describe three ways equilibrium can be shifted in a reversible reaction. Explain each shift in terms of Le Châtelier's principle and identify whether the shift will be toward products or reactants.

Ans.



- ✓ **Changing concentration**, The concentration of ammonia decreases, which causes the rate of the reverse reaction to decrease. As a result, the forward reaction is temporarily faster than the reverse reaction- described as a shift to the right-and more ammonia is formed.
- ✓ **Changing temperature** If the temperature is reduced the equilibrium responds by reacting to release energy and raise the temperature. A shift to the right occurs. More ammonia is formed as a result.
- ✓ **Changing volume and pressure** The pressure can be reduced by decreasing the number of gas molecules. Because the product (NH₃) side of the equation has fewer gas molecules (2) than the reactant side (4), the equilibrium shifts to the right. More ammonia is formed as a result.

36- Compare and contrast chemical and physical equilibrium.

Ans.

- **A physical equilibrium** is a state of equilibrium in which the physical state of the system remains unchanged.
- **Chemical equilibrium** is a state of affairs in which the concentrations of reactants and products do not change during the reaction.

Note That □ :

When opposing physical changes take place at equal rates, a state of physical equilibrium exists.

Similarly, when opposing chemical reactions take place at equal rates, a state of chemical equilibrium exists.



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37- What is the effect of increasing/decreasing the pressure of a gas over a liquid?

38- What happens to the solubility of a gas in a liquid if the temperature of the gas is increased?

Ans.

Solubility of gases increases by

1- Increasing the pressure

2- Decreasing the temperature

Note that □ :

- ✓ Increasing the pressure of a gas over a liquid forces more gas to dissolve in the liquid.
- ✓ Cooling a liquid increases the amount of gas that will dissolve in it.

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39- Explain how the temperature of a liquid solvent affects the solubility of a solid compound?

Ans.

- As the temperature of a liquid solvent increases, the amount of solid solute that can dissolve into it increases (Solubility increases)

40- Compare and contrast solubility and concentration.

Ans.

- **The concentration of a solution:** is the amount of **solute** dissolved in a given amount of solvent.
- **Solubility:** is the maximum amount of a solute that can be dissolved in a given amount of solvent at a given **temperature.**

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Remember That □:

- ✓ **Concentration** gives the amount of substances in a solution.
- ✓ **Solubility** is the ability of a substance to dissolve in another substance.
- ✓ If the solubility of a material is high in a solvent, then its concentration will be high in the solution. Similarly, if the solubility is low, concentration will be low

Don't Forget □:

- **Concentration: is percentage by volume.**
- Solubility is often expressed as grams of solute per 100 g of water.

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41- You are given a solution containing potassium nitrate dissolved in water. How could you determine whether the solution is unsaturated, saturated, or supersaturated?

Ans.

- If the amount of added solute is less than the solubility number then this solution is **unsaturated solution**
- If the amount of added solute is equal to the solubility number then this solution is **saturated solution**
- **A supersaturated solution:** is one that contains more solute than a saturated solution at the same temperature. They may form crystals or precipitate or remains of undissolved solute when a more solute is added.

Saturated Solutions

YOUR DICTIONARY

Unsaturated
dissolved solute is **below** saturated point;
more can dissolve

Saturated
dissolved solute is **at** saturation point;
no more can dissolve

Supersaturated
dissolved solute is **above** saturated point; additional solute **gathers** at the bottom

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