

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

7

Solution

Questions and Activities

A. MCQs (Choose the correct option)

1. The Mixture of solid and liquid is called a solution. What is the liquid called?

- a. Solute b. Solvent
c. Suspension d. Sediment

Ans: b. Solvent

2. A solution containing less solute than its capacity to dissolve is :

- a. Saturated
b. Unsaturated
c. Supersaturate
d. Aqueous

Ans: a. Saturated

3. When the more solute is dissolved in saturated solution, the solution becomes:

- a. Saturated
b. Unsaturated
c. Supersaturate
d. Dilute

Ans: c. Supersaturate

4. In aqueous solution which of the following is most soluble solute?

- a. Oil b. Sugar
c. Chalk d. Sand

Ans: b. Sugar

5. Choose the most effective factor for increasing solubility in a solution.

- a. Grinding b. Stirring
c. Heating
d. Increasing pressure

Ans: c. Heating

B. Write True and False (correct the statement if it False)

a. The substance in which the substance dissolves and is in greater amount is called a Solute.

Ans: False. The substance in which the substances dissolves and is in greater amount is called a solvent.

b. The amount of solute which dissolves in a given solvent has no upper limit.

Ans: False. The amount of solute which dissolve in a given solvent has an upper limit.

c. Dissolving the solute can be faster by stirring the mixture.

Ans: False. Dissolving the solute can be faster by heating the mixture.

d. The chance of solubility between two unlike substances are more challengeable than the unlike substances.

Ans: False. The chances of solubility between two unlike substances are more challengeable than the like substances.

e. An unsaturated solution is a solution in which the solution the solute has completely dissolved in the solvent leaving no remaining substance.

Ans: True

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C. Short questions.

1. What is the difference between saturated and unsaturated solution?

Ans:

Saturated Solution	Unsaturated Solution
A saturated solution is a solution in which the maximum amount of solute has been dissolved in the Solvent at a given temperature	An unsaturated solution is a solution in which the solute has completely dissolved in the solvent leaving no remaining substance.

2. Bilgees was preparing her morning coffee. She adds hot water sugar to her coffee which fully dissolves and makes it sweeter to taste.

• Is her cup of coffee considered a solution and why?

Ans: Yes, her cup of coffee is considered a solution because she added hot water and sugar to her coffee which fully dissolved.

• In the above scenario which one is the solute and which one is the solvent?

Ans: In the above Scenario coffee and sugar are solute While water is solvent.

3. How increase in temperature speed up the dissolving process?

Ans: The process of dissolving speed up by the increasing temperature, solute particles into small pieces. At lower temperature less

amount of solute dissolved and higher temperature make amount of solute dissolving.

4. What happens when solution becomes supersaturated?

Ans: Supersaturated solutions are formed when more solute is added to saturated solution at a higher temperature. So as the temperature decreases, the solute comes out of the solution, forming crystals.

5. In gases, solubility increases with increase in pressure. Give a daily life example.

Ans: The solubility of carbon dioxide in water under normal atmospheric pressure is low, but when the water surface is subjected to higher pressure, a lot of CO₂ gas gets dissolved in it.

6. How do nature of solutes have an effect on the solubility?

Ans: The compound with similar chemical features will dissolve in one another. The chance of solubility between two unlike substances are more challengeable than the like substances. Small amount of solute dissolve faster than large amount of solute at given temperature.

7. Khushi added some olive oil to a cup of water. Why a layer of oil formed at the surface of water?

Ans: Oil and water are liquid but their chemical composition is different from each other Oil and water to form two separate layers waters

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molecules Pack closer together, So they sink to the bottom, leaving oil sitting on top of water.

8. How increases in temperature effects the solubility of gases?

Ans: The solubility of gases decreases with increasing temperature.

D. Long questions

1. What is the effect of increasing temperature on the solubility of solid in liquids?

Ans: Increases in temperature increases in solubility. The solubility of solute in a solvent typically depends on temperature. Generally, as compared to gases, liquids and solid have higher solubility in water at higher temperature. More sugar can dissolve in hot water than cold water.

2. Explain the formation of saturated and super saturated solution.

Ans: **Formation of Saturated Solution**

A saturated solution is a solution in which the maximum amount of solute has dissolved in the solvent at a given temperature for e.g, 40.0 g of NaCl added to 100 ml of water, 36.0 g dissolves and 4.0g remain 44 dissolved, forming saturated solution.

Formation of unsaturated Solution

An unsaturated solution is a solution in which solute has completely dissolved in the solvent leaving no remaining

substance. When 30.0g of NaCl is added to 100 ml of water, it all dissolves, forming an unsaturated solution.

E. Structure questions

1. Look at the beaker's of concentrated solution:

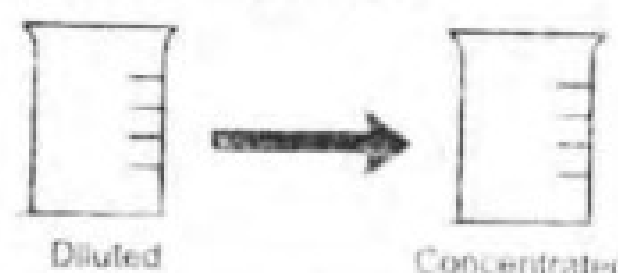


Amount of Solute = 10 ml	Amount of solute = 10 ml
Amount of Solvent = 20 ml	Amount of Solvent = 40 ml
Colour = ?	Colour = ?

Ans:

Amount of Solute = 10 ml	Amount of solute = 10 ml
Amount of Solvent = 20 ml	Amount of Solvent = 40 ml
Colour = Purple	Colour = Pink

How will you change dilute solution to concentrated solution?



Amount of Solute = ?	Amount of Solute = ?
Amount of Solvent = ?	Amount of Solvent = ?
Colour = ?	Colour = ?

Ans:

Amount of Solute = 10 ml	Amount of Solute = 10 ml
Amount of Solvent = 40 ml	Amount of Solvent = 20 ml
Colour = Pink	Colour = Purple

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2. (a) Write the definitions in the empty boxes.

Ans: **Dilute Solution:**

A dilute solution is one in which there is a relatively small amount of solute dissolved in the solution.

Concentrated Solution

A concentrated solution that contains a relatively large amount of solute.

Saturated Solution

A saturated solution is a solution in which the maximum amount of solute has dissolved in the solvent at a given temperature.

Unsaturated Solution

An Unsaturated Solution a solution in which the solute has completely dissolve in the solvent leaving no remaining substances.

(b) Name the factors affecting the solubility and how these factors effects it.

Ans: **Factors affecting the solubility**
Solubility of a solute in a Solvent depends on:

- **The nature of Solute and solvent**

The chemical compound with similar chemical features will dissolve in one another. The chances of solubility between two unlike substances are more challengeable then the like substances.

- **The Temperature**

Increases in temperature increases the solubility. Decrease in temperature decrease in solubility. Gases have higher solubility at lower temperature.

- **The Pressure**

Solubility of solids and liquids hardly gets affected by changes in pressure. However, in gases solubility increases with increases in pressure and solubility decreases with decreases in pressure.

- F. **Project Work**

- **How to remove oil pollutants from water. E.g. by using sand, a cheese cloth, a spoon etc.**

Ans: By Using Sand

- **Make a list of some solutions and find out their usage in daily life.**

Ans: Sugar & Milk, Ink in water, Oxygen in water, Lemon juice in water. Ketchup, cold drinks, medical solutions etc.

- **Identify the solute and solvent in each solution?**

Ans: Solute Solvent

Tincture of Iodine	Iodine	Alcohol
Air	Oxygen, Co ₂ and few noble gases	Nitrogen
Fizzy drink	Co ₂ and sugar	Water
Gold jewellery	20% silver and other metals	80% gold

Point to Ponder?

- **Have you ever experienced the smell while Passing through the Kitchen during cooking?**

Ans: Hot food has a very high temperature. Thus it spreads to a very large distance. So we can say that we smell hot food from a kitchen because of diffusion.

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- In this example there are two medium, the air of the environment and the smell. Identify solute and solvent?

Ans: The air of the environment is solvent while smell is solute.

Try it out

Identify solvent and solute in the given solutions.

Ans:

Solution	Solvent	Solute
Chocolate Milk	Milk	Chocolate
Jelly	Water	Jelly crystals
Vinegar	Water	Acetic acid
Sea Water	Water	Salt and other aquatic living thing

- Can you give some other example of aqueous solutions?

Ans: Lemonade, Fizzy drinks, Sea water Soap, detergents, fog, Rain etc.

STOP AND CHECK

- Smoke is an example of solution. Identify solute and solvent.

Ans: Smoke is solute while air is solvent.

- A cup of coffee and cough syrup are examples of solutions. Inquire, what is the difference between these two solutions?

Ans:

Cup of coffee	Cough syrup
It is not dense in nature	It is dense in nature
It is the treatment against cough	It is respiratory Problem.

- Adding washing powder in the washing machine is an example of dilute solution or concentrate solution?

Ans: It is the example of dilute solution.

ACTIVITY 7.2

Investigate dilute and concentrated solution.

Ans: Sharbat is favourite drink of kids. Make two glasses of sharbat. Put one spoon of sugar and one spoon of sharbat in glass # 1 and three spoons of sugar and three spoons of sharbat in glass # 2.

Investigate

Which glass is more tasty and why?

Ans: Glass # 2 is more tasty because the amount of sugar and sharbat is more than glass # 1.

What is the effect of amount of solute and solvent on the sharbat?

Ans: The effects of amount of solute and solvent on the sharbat is that it become concentrated and more tasty. Less solute is dissolved in solvent in a dilute solution. It is not tasty.

ACTIVITY 7.3

Application of Solution

Aim, CLEANING COINS, THINK SOLUTION, PROVIDED, PROCEDURE SHARE Your FINDINGS

Ans: Citrus suice from citrus juice works similar to the other acids. But Cola will quickly remove the

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tarnish. Cola contains phosphoric acid that cleans the oxides.

ACTIVITY 7.4

Making of rock candy crystal by seedling techniques.

Rock candy is the best example of supersaturated solution. Rock candy is formed by allowing a supersaturated solution of sugar and water to crystallize onto a surface suitable for crystal nucleation, such as a string or sticks.

Material Required

Water: one cup, sugar: three cups, a sauce pan, a spoon to stir, three glass jars, three different food colors some wooden sticks.

Procedure:

Boil one cup of water in a saucepan, add three cups of sugar and stir with a spoon until sugar dissolves. Then pour the solution into three different glass jars. Add sticks first in the solid sugar crystals and then into the syrup and leave it forms. The solid sugar crystals form on the stick.

◆ **More MCQs (Choose the correct option)**

1. **Air consists of oxygen, carbon dioxide and few noble gases dissolved in**

- a. Hydrogen b. Water
c. Nitrogen d. Sulphur

Ans: c. Nitrogen

2. **An aqueous solution is the solution in which _____ is used as solvent.**

- a. water b. sugar
c. Salt d. Sharbat

Ans: a. water

3. **In dental filling mercury dissolved in**

- a. Gold b. Silver
c. zinc d. Aluminum

Ans: b. Silver

4. **A solution can be dilute and concentrated depending upon the amount of _____.**

- a. Solvent b. Sediment
c. Suspension d. Solute

Ans: d. Solute

5. **Maximum of 36.0 g of NaCl (Salt) will dissolve in _____ ml of water.**

- a. 100 ml b. 120 ml
c. 140 ml d. 2.80 ml

Ans: a. 100 ml

6. **Rock candy is made by.**

- a. chlorination
b. crystallization
c. Filtration
d. sedimentation

Ans: b. crystallization

7. **Acetone is a _____ Solvent.**

- a. Gas b. liquid
c. solid d. sediment

Ans: b. liquid

8. **In gases solubility increases with increases in _____.**

- a. Pressure b. temperature
c. nature of solute
d. nature of solvent

Ans: a. Pressure

9. **Saline solutions are composed of water and _____.**

- a. Sodium hydroxide
b. Calcium oxide
c. Sodium chloride
d. carbon dioxide

Ans: c. Sodium chloride

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10. Metal alloy is the example of
a. gas in solid b. solid in solid
c. liquid in solid d. solid in gas

Ans: b. Solid in Solid

♦ **Short questions.**

1. **Define Lemonade.**

Ans: Lemonade is mixture of lemon juice and sugar. Sugar and lemon juice dissolve in water to form Lemonade solution. In Lemonade water is the solvent. Sugar and lemon juice are solute.

2. **What is Tincture of iodine?**

Ans: Tincture of iodine is an antiseptic made of iodine dissolved in alcohol.

3. **How water is a universal solvent.**

Ans: Water is a common solvent. The most valuable Property of water is its ability to dissolve more substances than any other liquid.

4. **What is aqueous solution?**

Ans: A solution in which water is used as solvent is known as aqueous solution. Sugar solution, salt solution and mineral water are all aqueous solutions.

5. **Where Turpentine is used as solvent?**

Ans: Turpentine as a solvent is used in the production of paints, inks and dyes.

6. **What is the difference between dilute and concentrated solution?**

Ans: **Dilute Solution**

A solution that has less solute dissolved in the solvent.

Concentrated Solution

A solution that has more solute dissolved in the solvent.

7. **What do you mean by the word saturated as full?**

Ans: A solution that is unable to absorb or dissolve- any more of a solute at a given temperature and pressure.

8. **What is dissolving and solubility?**

Ans: Dissolving is the process that occurs when a solute is added to solvent and the solute disappears.

SOLUBILITY.

The solubility of a substance is the amount of substance that will dissolve in a given amount of solvent at a particular temperature.

9. **What do you mean by Medical Solutions?**

Ans: Medical solutions are important for treating dehydration and for cleaning and treating wounds. One class of medical solution is known as Saline solutions. These are composed of water and sodium chloride. Normal saline is also used in management and treatment of dehydration.

10. **What is the mean by like dissolve like?**

Ans: Like dissolves like means that the chemical compounds with similar chemical features with dissolves in one another.

11. **What happen when you mix oil and water?**

Ans: Both oil and water are liquid but – their chemical composition is different from each other water

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molecules attract each other and the oil molecules stick together.

12. What is Rock-candy?

Ans: Rock candy is the best example of super saturated solution. Rock candy is formed by allowing a super saturated solution of sugar and water to crystallize onto a surface suitable for crystal nucleation, such as a string or stick.

13. Define Acetone with some uses?

Ans: Acetone is a liquid solvent that can break down and dissolve other substances. Companies included acetone in a products such as nail polish remover, Paint remover and varnish remover. Some also Use acetone to manufacture plastic, lacquers and textiles.

14. How stirring and Grinding help in the process of dissolving materials?

Ans: **STIRRING**

Dissolving the solute can be speeds up by stirring the mixture. Stirring increases the rate of dissolving because it distributes the solute Particles throughout the solvent.

GRINDING

The amount of solute dissolves faster when it is ground into smaller particles, rather than in large pieces. The process of dissolving can be faster grinding the solute before it is put into the solvent.

◆◆◆◆◆◆◆◆

8

FORCE AND MOTION

Questions and Activities

A. MCQs (Choose the correct option)

1. SI unit of force is

- a. kilogram b. centi-second.
c. meter. d. newton.

Ans: d. newton.

2. By dividing distance of a moving body with time, we obtain.

- a. speed. b. mass.
c. gravity d. force.

Ans: a. speed.

3. If a body moves for 10 seconds with speed of 30 m/s then its covered distance is:

- a. 30 m b. 3m
c. 300 m d. 150 m

Ans: a. 30 m

4. Which of the following animal has highest running speed?

- a. Horse b. Turtle
c. Cheetah d. Silver ant

Ans: c. Cheetah

5. Every action has reaction equal in magnitude but

- a. opposite b. perpendicular.
c. parallel. d. anti- parallel.

Ans: a. opposite.

6. Unit of speed is:

- a. N b. m/s
c. kg m d. kg m/s

Ans: b. m/s