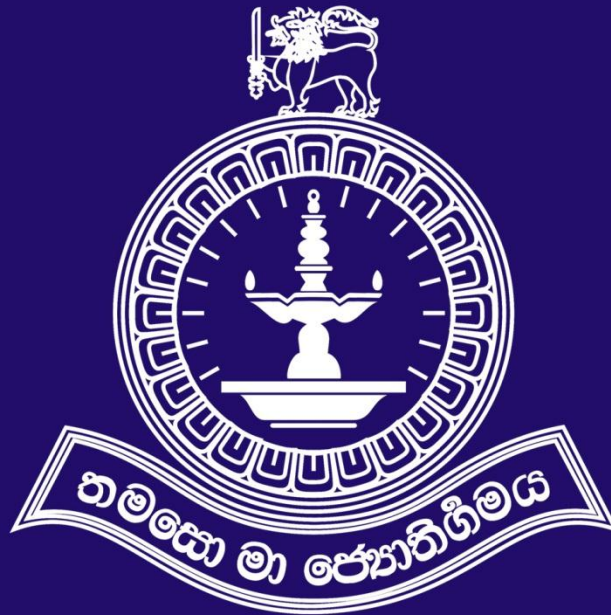


“Thurstan College, being unshaken amidst the COVID 19 challenges”

Series of Supportive Activities



Grade 11 - Science

THURSTAN COLLEGE
COLOMBO 07

Thurstan College, being unshaken amidst the COVID 19 challenges

Series of Supportive Activities

Concept, Guidance & Supervision - Principal Mr. Pramuditha Wickramasinghe

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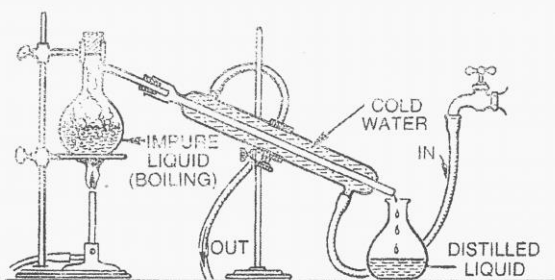
-Grade Head (Grade 11) Mrs. Samanthi Gamage

Preparation of Activity Books

- | | | |
|----------------------|---|--------------------------|
| ▪ Grade 6 (Science) | - | Mr. Anjula Rumesh Kumara |
| ▪ Grade 7 (Science) | - | Mr. Anjula Rumesh Kumara |
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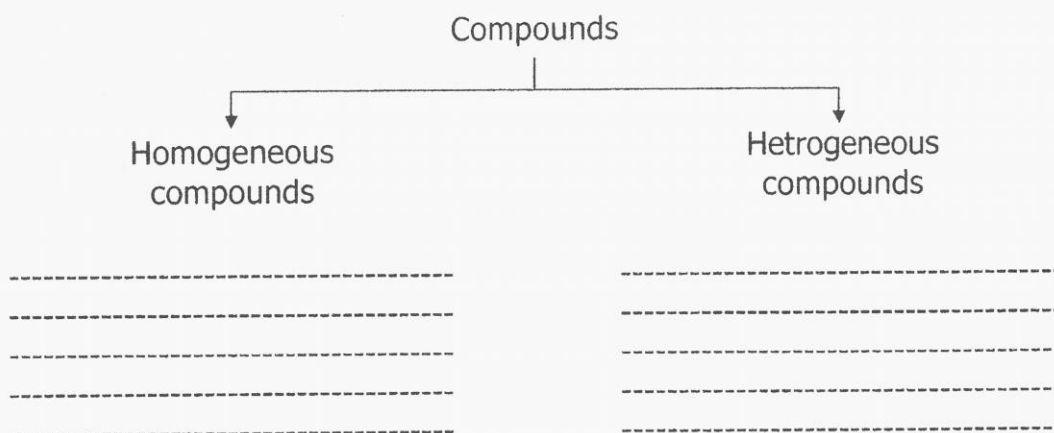
SCIENCE

MIXTURES



Mixtures

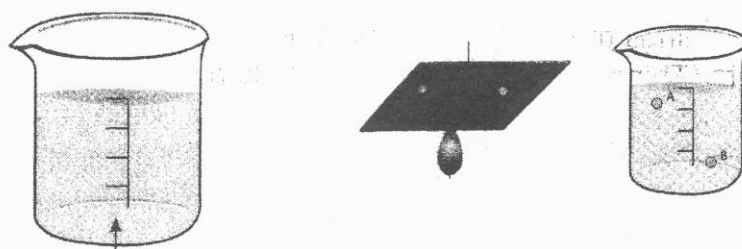
- Elements :- The chemical substances that are made by two or large number of same kind of atoms known as a elements
 ex :- 1. Carbon made by same kind of carbon atoms.
 2. Nitrogen atom made by same kind of Nitrogen atom.
- Compounds :- The chemical substances that are made by two or more number of same or different kind of elements known as a compound.



- Definition of mixture

- ex :- 1. Atmosphere is a mixture made by different gases. (CO_2 , H_2 , N_2 , O_2 , etc)
2. Ocean water (Nael and water)
 3. Rock (Same or different kind of minerals)
 4. Friuit salad (Artificial mixture)
 5. Motor mixture (sand, cement, water)
 6. Cake (sugor, slour, colourings, butter, water)

Activity 3.1.3



According to above Activity following conclusions can be made.

1. Colour / appearance differ from place to another place
2. Number of clay particles are varies in unit area surface.

Activity 3.1.4

- Following conclusions can be mode according to above activity.

1. -----
2. -----

- According to above 3.1.3 and 3.1.4 there are two kind of mixtures

Homogeneous mixture	Hetrogeneous mixture
-----	-----
-----	-----
-----	-----
ex :-	ex :-
1. Nacl mixture (solid - liquid mixture)	1. Flour mixture (solid - water mixture)
2. C_2H_5OH mixture (Liquid - Liquid mixture)	2. coconut oil mater (Liquid - Liquid mixture)
3. Brass alloy (solid - solidmixture)	3. Salt suger mixture (solid - solidmixture)
-----	4. CO_2 mixture (gas - liquid mixture) (when Heating water)
4. CO_2 mixture (gas - gas mixture)	5. carbon and sulphar mixuture (solid - solid mixture)
5. $KMnO_4$ mixture (solid - liquid mixture)	

A Homogenous mixture simply known as a solution it contains two components.

1. Solute (Things that dissolve in solution)
2. Solvents (Things having highest composition)

solute + solvent = solution

ex :- salt + water = salt solution
 CuSO_4 + water = CuSO_4 solution
Sugar + water = sugar solution

Solubility of a solution

- -----

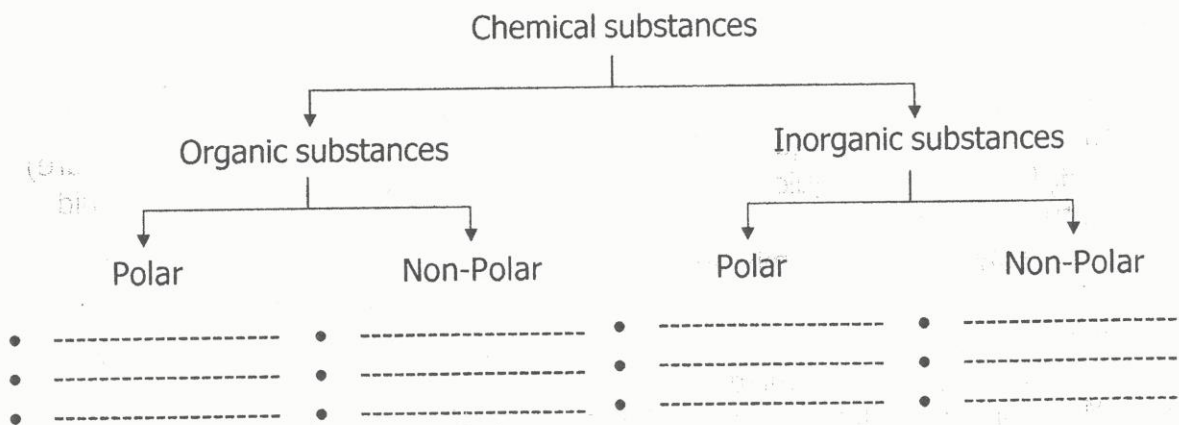
ex :-

- Factors affect for solubility

Activity 3.1.8. and Activity 3.1.9

- Following are the factors effect for solubility.

1. -----
2. -----
3. -----



Important

- Polar substances dissolve in polar substances

1. C_2H_5OH dissolve in water explain.

2. NH_3 dissolve in water explain.

- Non - Polar substances dissolve in non - polar substances

1. Grease in Non - Polar substance it's dissolve with kerosine oil.

2. Jack later is non - polar substances it's dissolve in kerosine oil. but not dissolve in water

- conclusion

- Like substances dissolve in like substances
- Unlike substances not dissolve each other

- Non - Polar substances dissolve in non - polar substances

Solubility in gases

- Evolving air bubbles when opening sodabottle.
- Evolving air bubbles when heating water beaker.
- Two factors effect for solubility in gase.

01. Temperature

02. Pressure

ex :- 01. fish in the ocean comes to the water surface during day time explain.

Composition of Mixture

ex :- Cup of Tea contains 250 cm³ of H₂O and 10g of suger it's composition can be express as following.

$$\begin{aligned}\text{composition} &= \frac{10\text{g}}{250\text{ cm}^3} \\ &= 0.04\text{ g cm}^{-3}\end{aligned}$$

$$\text{composition} = \frac{\text{Mass of solute}}{\text{Volute of solute}}$$

- The amount of substances available in given solution known as a composition.
- Composition of Mixture used in following field.

• -----

• -----

- Following methods are used for explain the composition

- | | |
|---|---|
| 1. As a Fraction of Mass $\left(\frac{m}{m}\right)$ | 2. As a Fraction of volume $\left(\frac{V}{V}\right)$ |
| 3. As a Fraction of mole $\left(\frac{n}{n}\right)$ | 4. As a mass and volume $\left(\frac{m}{V}\right)$ |
| 5. As a moles and volume $\left(\frac{n}{V}\right)$ | |

1. As a Fraction of Mass $\left(\frac{m}{m}\right)$

- If Two substances A and B are mixed with each other It's composition can be explain as following

$$\text{Mass fraction of A} = \frac{\text{Mass of A}}{\text{Mass of A} + \text{Mass of B}}$$

- Mass fraction means the ratio between mass of solute and mass of solution.

ex :-

1. Find the mass fraction of 100g of C₆H₁₂O₆ solution If 10g of C₆H₁₂O₆ dissolved ?

2. If 250g of Nacl dissolve in water and evaporated. 10g of Nacl was remain find the mass fraetion of Nacl ?

3. Find the mass fraction of 250g of water when it dissolve 20g of CuSO_4

2. As a Fraction of Mass $\left(\frac{V}{V}\right)$

- If Two Substances A and B are mixed with each other. It's composition can be explain as following.

$$\text{Volume fraction of A} = \frac{\text{Volume of A}}{\text{Volume of A+B}}$$

- Volume fraction means the ratio between volume of solute and volume of solution.

ex :-

1. Find the volume fraction of 250 cm^3 of water mixed with 60 cm^3 of $\text{C}_2\text{H}_5\text{OH}$.

2. Explain how to prepare $\frac{1}{5}\left(\frac{V}{V}\right)$ CH_3COOH solution 500 cm^3 ?

3. Find the volume fraction of 490 cm^3 of water and final add NaOH solution up to 500 cm^3 ?

4. Explain how to prepare $\frac{1}{50}\left(\frac{V}{V}\right)$ HCl solution 250 cm^3 ?

3. As a mole Fraction $\left(\frac{n}{n}\right)$

$$\text{Mole Fraction} = \frac{\text{No: of mole in solute}}{\text{No: of moles in solution}}$$

ex :-

1. Find the mole fraction of NaOH 40g add with 160g of H₂O

2. Find the mole Fraction H₂O₂ 64g add with H₂O 32g

3. Find the mole fraction of C₆H₁₂O₆ add with 9g of H₂O

4. As a mass and volume $\left(\frac{m}{v}\right)$

$$\text{Composition as mass and volume} = \frac{\text{Mass of solute}}{\text{Volume of solution}}$$

1. Find the composition of Aquous solution of 15g of co(NH₂)₂ with 1dm³ of water.

5. Composition as a moles and volume $\left(\frac{n}{v}\right)$

- This method is used for express the composition in a Homogeneous mixture.
- No: of moles used in solute is measured by mol.
- Volume is measured by cubic decemeter (dm³)

- Number of moles dissolved in 1dm³ of solution known as a concentration

ex:- 1. There are 4 moles of NaOH in 2dm³ of water. Find the NaOH concentration.

