



Note :Answer all the Questions

Q1: Choose the correct answer:

(8 points / 1 pt each)

- 1- A ----- solution has a relatively small amount of the same solute per unit of solution.
(a) Dilute (b) concentrate (c) Saturated (d) Unsaturated
- 2- ----- contains a hydrogen atom and dissolves in water to form a hydrogen ion, H^+ .
(a) Salt (b) Water (c) acid (d) Base
- 3- The product formed by loss of a proton from an acid is called its -----
(a) Base (b) Conjugate acid (c) Acid (d) Conjugate base
- 4- The pH value of neutral solution is
(a) 1.8 (b) 7 (c) 7.4 (d) 14
- 5- Substances whose aqueous solutions are conductors of electricity are called-----.
(a) Nonelectrolytes (b) Unsaturated (c) Electrolytes (d) Saturated
- 6- The hydrogen bond is stronger than a-----interaction.
(a) Ionic bond (b) Covalent bond (c) Metallic bond (d) Vander Waals
- 7- If the number of moles are 0.5 and the volume is 1.5 L, the molarity is -----.
(a) 12.5M (b) 0.33M (c) 0.66 M (d) 1.5 M
- 8- ----- results from the sharing of electrons between two atoms with similar electronegativities.
(a) Ionic bond (b) Hydrogen bond (c) Covalent bond (d) Metallic bond

Q2:- Full the blanks:

(Choose Nine only)

(9 pts / 1pt each)

- 1- ----- readily accepts a proton. When a strong base dissolves in water, 100% of the base dissociates into ions
- 2- ----- is a science deals with, the matter and how it interacts with other matter and/or energy.
- 3- the atom is consist of ----- and ----- .
- 4- Matter is typically found in one of three different physical states: -----, ----- and ----- .
- 5- The number of protons in the nucleus of each atom of an element is called the -----
- 6- If the molecule contains only two atoms is called -----.
- 7- ----- is the electrostatic attraction between polar molecules that occurs when hydrogen (H) atom bound to a highly electronegative atom such as nitrogen (N).
- 8- -----contains hydroxide and dissolves in water to form $-OH$.

Note :Answer all the Questions

Q3 : answer :

(15 points)

A: The pH value of solution measuring by

(3 points)

- (a) -----
(b) -----
(c) -----

B:- Complete the following table:

(3 points)

- | | | | |
|-----|-------------|------------|-----------------------|
| (a) | pOH = ----- | pH = 8 | $[H]^+ =$ -----. |
| (b) | pOH = 5 | pH = ----- | $[H]^+ =$ -----. |
| (c) | pOH = ----- | pH = ----- | $[H]^+ = 1 * 10^{-4}$ |

C:- The types of the chemical formula:

(3 points)

- (a) -----
(b) -----
(c) -----

D: What are the types of hydrogen bonding:

(2 points)

- (a) -----
(b) -----

F:- What are the types of chemical bonds:

(3 points)

- (a) -----
(b) -----
(c) -----
(d) -----
(e) -----
(f) -----

Note :Answer all the Questions

Q4:- Answer:

(Choose Two only)

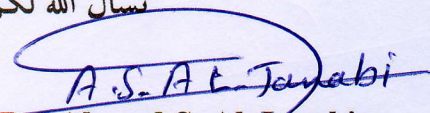
(8 pts/ 4pts each)

A- Calculate the grams of NaCl in 130mL of 8% m/v NaCl solution.

B- Calculate the volume in (Liters) of 8 M NaOH containing 500mmole of NaOH.

C- To what volume should you dilute 150 mL of 5 M HCl solution to obtain 2.4 M HCl solution?

نسال الله لكم التوفيق


Dr. Ahmed S. Al-Janabi

Tuesday, December 12, 2017



Note : Answer all the Questions

Q1: Choose the correct answer:

(8 points / 1 pt each)

- 1- A ----- solution has a relatively small amount of the same solute per unit of solution.
(a) Dilute (b) concentrate (c) Saturated (d) Unsaturated
- 2- ----- contains a hydrogen atom and dissolves in water to form a hydrogen ion, H^+ .
(a) Salt (b) Water (c) acid (d) Base
- 3- The product formed by loss of a proton from an acid is called its -----
(a) Base (b) Conjugate acid (c) Acid (d) Conjugate base
- 4- The pH value of neutral solution is
(a) 1.8 (b) 7 (c) 7.4 (d) 14
- 5- Substances whose aqueous solutions are conductors of electricity are called-----
(a) Nonelectrolytes (b) Unsaturated (c) Electrolytes (d) Saturated
- 6- The hydrogen bond is stronger than a-----interaction.
(a) Ionic bond (b) Covalent bond (c) Metallic bond (d) Vander Waals
- 7- If the number of moles are 0.5 and the volume is 1.5 L, the molarity is -----
(a) 12.5M (b) 0.33M (c) 0.66 M (d) 1.5 M
- 8- ----- results from the sharing of electrons between two atoms with similar electronegativities.
(a) Ionic bond (b) Hydrogen bond (c) Covalent bond (d) Metallic bond

Q2:- Full the blanks:

(Choose 9 only)

(9 pts / 1pt each)

- 1- **A strong base** readily accepts a proton. When a strong base dissolves in water, 100% of the base dissociates into ions
- 2- **Chemistry** is a science deals with, the matter and how it interacts with other matter and/or energy.
- 3- the atom is consist of **Electrons** and **Nuclei**.
- 4- Matter is typically found in one of three different physical states: **Solid, Liquid and Gas**.
- 5- The number of protons in the nucleus of each atom of an element is called the **atomic number**
- 6- If the molecule contains only two atoms is called **diatomic molecule**
- 7- **A hydrogen bond** is the electrostatic attraction between polar molecules that occurs when hydrogen (H) atom bound to a highly electronegative atom such as nitrogen (N).
- 8- **A base** contains hydroxide and dissolves in water to form $-OH$.

Note :Answer all the Questions

Q3 : answer :

(15 points)

A: The pH value of solution measuring by

(3 points)

- (a) pH meter.
- (b) Litmus paper .
- (c) An acid – base indicator .

B:- Complete the following table:

(3 points)

(a) pOH = 6	pH = 8	$[H]^+ = 1 * 10^{-8}$.
(b) pOH = 5	pH = 9	$[H]^+ = 1 * 10^{-9}$.
(c) pOH = 10	pH = 4	$[H]^+ = 1 * 10^{-4}$

C:- The types of the chemical formula:

(3 points)

- (a) Simplest formula.
- (b) Molecular formula.
- (c) Structural formula.

D: What are the types of hydrogen bonding:

(2 points)

- (a) Inter-molecule hydrogen bond.
- (b) Intra-molecule hydrogen bond.

F:- What are the types of chemical bonds:

(4 points)

- (a) Ionic bond
- (b) covalent bond.
- (c) polar covalent bond
- (d) coordination bond
- (e) metallic bond
- (f) hydrogen bond

Note :Answer all the Questions

Q4:- Answer:

Choose Two only

(8 pts/ 4pts each)

A- Calculate the grams of NaCl in 130mL of 8% m/v NaCl solution.

Solution:

$$m/v \% = \frac{m}{v} * 100$$

$$8 \% = \frac{m}{130} * 100 \Rightarrow m = \frac{130 * 8}{100} \Rightarrow m = 10.4 \text{ g.}$$

B- Calculate the volume in (Liters) of 8 M NaOH containing 500mmole of NaOH.

Solution:

$$M = \frac{n \text{ (mole)}}{V \text{ (Liter)}}$$

Should be converted the mmole to mole

$$n(\text{mole}) = \frac{n \text{ (mmole)}}{1000} \Rightarrow n(\text{mole}) = \frac{500}{1000} = 0.5 \text{ mole}$$

$$8 = \frac{0.5 \text{ (mole)}}{v \text{ (Liter)}} \Rightarrow V \text{ (Liter)} = \frac{0.5}{8} = 0.0625 \text{ Liter}$$

C- To what volume should you dilute 150 mL of 5 M HCl solution to obtain 2.4 M HCl solution?

Solution:

$$M_1 * V_1 = M_2 * V_2$$

$$150 * 5 = 2.4 * V_2$$

$$V_2 = \frac{150 * 5}{2.4} = 312.5 \text{ mL}$$

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