

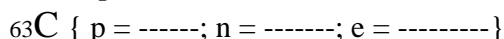
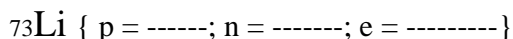


Questions Bank

Lect. 1 : Chemistry & Atom

Q1: Full the blanks

- [1] The mixture can be divided to ----- and -----.
- [2] The fundamental unit of a chemical substance is called an -----.
- [3] Chemistry is -----.
- [4] Matter is typically found in one of three different physical states are -----, ----- and -----.
- [5] ----- is a combination of two or more atoms held together in a specific shape by attractive forces.
- [6] nucleus is a center of an atom containing ----- and -----.
- [7] Isotope is -----.
- [8] Elements can be divided to three major parts -----, ----- and -----.
- [9] State the number of protons, neutrons and electrons in an atom of each the following.



Q2: Choose the correct answer:

- [1] ----- is a combination of two or more substances in which the substances retain their distinct identities. Examples are air, soft drinks, milk, and cement.
(a) solution (b) atom (c) molecule (d) mixture
- [2] The fundamental unit of a chemical substance is called an -----.
(d) material (c) molecule (b) ion (a) atom
- [3] The number of protons in an atom is called its -----
(d) molecular mass (c) Isotope (b) atomic number (a) Atomic mass
- [4] The number of protons in Au ${}^{79}_{195}$ atom is-----
(d) 195 (c) 101 (b) 79 (a) 116

Q3 :- Account for the following statements by True (T) or False (F)

- [1] The liquid materials have fixed shapes and volumes.

- [2] A molecule is a combination of two or more atoms held together in a specific shape by attractive forces.
- [3] The atom is consist of nucleus and electrons.
- [4] The number of protons in an is called isotope.
- [5] All elements in the periodic table are metals.

Lect. 2: Chemical bonding

Q1: Full the blanks :-

- [1] The types of the chemical formula are -----, ----- and -----.
- [2] The types of hydrogen bonding is ----- and -----.
- [3] The chemical bond is -----.
- [4] The hydrogen bond is ----- than a van der Waals interaction.
- [5] The ----- bond is results from the sharing of electrons between two atoms with similar electronegativity.
- [6] The types of chemical bonds are -----, -----, -----, -----, ----- and -----.
- [7] The types of chemical formula are -----, ----- and -----.
- [8] ----- are diagrams that show the bonding between atoms of a molecule and the lone pairs of electrons that may exist in the molecule.
- [9] The ionic bond is results from bonded -----and -----.

Q 2: Answer the following:-

- (a) What are the types of the chemical bonds? and discuss one them.
- (b) What the different between molecular formula and structural formula?
- (c) What is the different between Intermolecular hydrogen bond and Intramolecular hydrogen bond? discuss with example.

Lect. 3: Solution and concentration

Q1: Full the blanks :-

- [1] A simple solution has two components, ----- and -----.
- [2] The substance in smaller amount is called the -----; the substance in larger amount is called the -----.
- [3] A ----- has a relatively large amount of a solute per unit of solution.
- [4] A ----- has a relatively small amount of the same solute per unit of solution.

- [5] Liquids that are not soluble in each other form two distinct layers (like water and oil) and are -----.
- [6] If the substances whose aqueous solutions are not conductors of electricity are called -----.
- [7] A solution whose concentration is at the solubility limit at a given temperature is a -----.
- [8] The interaction between hydrogen and oxygen in different molecules (intermolecular) is called a ----- due to the involvement of hydrogen.
- [9] If the substances whose aqueous solutions are conductors of electricity are called -----.
- [10] If the number of moles are 0.5 and the volume is 1.5 L, the molarity is -----.

Q2 :- Account for the following statements by True (T) or False (F)

- [1] A **dilute** solution has a relatively large amount of a solute per unit of solution
- [2] A **concentrated** has a relatively small amount of the same solute per unit of solution.
- [3] The interaction between hydrogen and oxygen in different molecules (intermolecular) is called ionic bond due to the involvement of hydrogen
- [4] If the substances whose aqueous solutions are conductors of electricity are called **electrolyte**.
- [5] If the number of moles are 0.5 and the volume is 1.5 L, the molarity is 0.33M.

Q 3: (a) What are the types of the common aqueous solutions? with examples.

(b) What is the types of solution according to the amount of solute in solvent?

Q 4:- Answer the following:-

- 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?

Note: You must know all examples and exercises in the lecture 3

Lect. 4: Acid and base chemistry

Q1:Full the blanks

- [1] ----- contains hydroxide and dissolves in water to form –OH.
- [2] Bronsted–Lowry Acid is a proton -----.

- [3] The product formed by loss of a proton from an acid is called its -----.
- [4] When a ----- dissolves in water, only a small fraction of the base forms ions.
- [5] When a ----- dissolves in water, only a small fraction of the acid dissociates into ions
- [6] A strong acid readily donates a proton, forming a -----conjugate base.
- [7] A ----- base readily accepts a proton, forming a strong conjugate acid.
- [8] The pH value of neutral solution is -----.
- [9] Pure water and any solution that has an equal concentration of H_3O^+ and OH^- ions equal ----- is said to be neutral.
- [10] ----- is defined as the negative logarithm of the hydrogen ion concentration.
- [11] A ----- is a solution whose pH changes very little when acid or base is added.

Q2 :- Account for the following statements by True (T) or False (F)

- [1] Arrhenius acid containing a hydrogen atom and dissolves in water to form a hydrogen ion (H^+).
- [2] A Bronsted–Lowry base is a proton donor.
- [3] The product formed by gain of a proton by a base is called its conjugate acid.
- [4] A strong acid readily donates a proton.
- [5] The pH value of neutral solution is 9

Q 3: Answer the following:-

(a) Which of the following species can be Bronsted–Lowry Acid/ base.

- | | | | | |
|---------------------------|------------------|--------------------|------------------|------------------------|
| 1- HNO_3 | 2- CH_4 | 3- Cl^- | 4- Cl_2 | 5- HF |
| 6- C_2H_2 | 7- NaOH | 8- NH_4^+ | 9- LiOH | 10- SO_4^{2-} |

(b) How to measuring the pH of solution?

Q 4:- Choose the correct answer

[1] Pure water and any solution that has an equal concentration of H_3O^+ and OH^- ions equal -----.

- (a) 11 (b) 4 (c) 7.4 (d) 7

[2] ----- contains a hydrogen atom and dissolves in water to form a hydrogen ion, H^+ .

- (a) Base (b) acid (c) Water (d) Salt

[3] The product formed by loss of a proton from an acid is called its -----

- (a) Conjugate base (b) Acid (c) Conjugate acid (d) Base

[4] The pH value of neutral solution is .

- (a) 14 (b) 7.4 (c) 7 (d) 1.8

[5] If the base has an OH⁻ concentration of 0.001M, the pH is -----.

- (a) 11 (b) 7 (c) 3 (d) 4

[6] The pH of the blood fluid is -----.

- (a) 6 (b) 14 (c) 7.4 (d) 7

[7] If the pH value is 9 the [OH⁻] concentration is -----.

- (a) 10⁻¹⁰ (b) 10⁻⁹ (c) 10⁻² (d) 10⁻⁵

Note: You must know all examples and exercises in the lecture 4