

INTERNATIONAL INDIAN SCHOOL, RIYADH**Class – XI****Subject – Chemistry** _____**Unit 1 SOME BASIC CONCEPTS OF CHEMISTRY****1 mark question**

1. What is the number of significant figures in 0.001620?
2. Calculate the percentage of nitrogen in NH_3 .
3. Calculate molecular mass of $\text{C}_6\text{H}_{12}\text{O}_6$ molecule.
4. State the law of multiple proportion.
5. How many atoms of Calcium are there in 2g of Ca?

2 marks Question:

6. Define element, compound and mixture.
7. Define Gay Lussac's law of gaseous volumes. Explain with one suitable example.
8. An organo metallic compound on analysis was found to contain C=64.4%, H=5.5 % and Fe= 29.9 %. Determine its empirical formula. (At mass of Fe= 56)
9. What volume of 6M HCl and 2MHCl should be mixed to get two litres of 3M HCl?

3 or more marks

10. If 20.0 g of CaCO_3 is treated with 20.0 g of HCl , how many grams of CO_2 can be generated according to the following equation:

$$\text{CaCO}_{3(\text{g})} + 2 \text{HCl}_{(\text{aq})} \rightarrow \text{CaCl}_{2(\text{aq})} + \text{H}_2\text{O}_{(\text{l})} + \text{CO}_{2(\text{g})}$$
11. Concentrated H_2SO_4 is 98% weight and has density 1.84 g cm^{-3} . What volume of concentrated acid is required to make 5.0 L of 0.50 M H_2SO_4 solution?

Unit 2 Structure of Atom**1 mark question.**

1. What is the physical significance of s_i and s_i^2 .
2. Write electronic configuration of Cu^{2+} and Cr^{3+} .
3. What is the shape of s-orbital and p-orbital
4. An atomic orbital has $n=3$, what are the possible values of l ?
5. State Hund,s rule of maximum multiplicity. Illustrate with an example.
6. State Pauli Exclusion Principle.
7. How many unpaired electrons are present in N? Name the principle which explains the presence of these unpaired electrons.

2 or more marks Question:

8. Write a short note on Plank's Quantum theory.
9. Calculate the wavelength of an electron that has been accelerated in a particle accelerator through a potential difference of 100 million volts.
10. How does Heisenburg's uncertainty principle support concept of orbital?
11. Calculate the uncertainty in position of dust particle with mass equal to 1 mg if the uncertainty in velocity is $5.5 \times 10^{-20} \text{ ms}^{-1}$ ($h= 6.626 \times 10^{-34} \text{ JS}$)
12. Establish a relation between wavelength of a moving particle and its kinetic energy. The wave length of a moving particle of mass $1.0 \times 10^{-6} \text{ Kg}$ is $3.312 \times 10^{-29} \text{ m}$. calculate its kinetic energy.($h= 6.625 \times 10^{-34} \text{ JS}$)

13. Define quantum numbers. Explain in brief how are different quantum numbers related to each other?

Unit 3 Classification of elements and periodicity in properties.

1 mark question

1. State the modern periodic law.
2. What is the IUPAC name and symbol of the element with atomic number 110?
3. Name the groups of elements classified as s-, p- and d-blocks.
4. Which is smallest among Na^+ , Mg^{2+} , Al^{3+} and why?
5. How does electro negativity vary (i) down the group (ii) across the period from left to right?

2 or more marks Question:

6. Elements A and B have atomic number 11 and 24 respectively. Write their electronic configuration and predict group, period and block to which they belong. Which of them is representative element?
7. a) Write general configuration of transition and inner transition elements.
b) Explain the following
 - i. Electron affinity of chlorine is more than of fluorine.
 - ii. I.E of nitrogen is greater than that of oxygen.
8. a) Why is ionization enthalpy of Be higher than Boron?
b) Why is second ionization energy of group -1 elements very high?
9. State the group to which elements having following electronic configuration belong:
 - i. $[\text{Ar}]4s^23d^1$
 - ii. $[\text{Kr}]5s^1$
 - iii. $[\text{Ar}]4s^23d^{10}4p^5$
 - iv. $[\text{Ar}]4s^13d^{10}$

Unit 4 Chemical bonding and molecular structure.

1 mark question

1. What is meant by electrovalent or ionic bond?
2. Write Lewis dot structure of Br , N^{3-} , Ca^{2+} , Mg , O .
3. Why is water liquid whereas H_2S gas at room temperature?
4. Draw Lewis structure for the following molecules.
 CCl_4 , CO_3^{2-} , PCl_5 , H_2O , N_2
5. What are two types of H-bonding? Which of them is stronger?
6. What is the state of hybridization of O in H_2O ?

2 or more marks Question:

7. Write the molecular orbital configuration of the species O_2^- and C_2
8. What is meant by VSEPR theory? Explain the shape of PCl_5 using VSEPR theory.
9. a) What is sigma bond stronger than π bond?
b) Why does Be_2 not exist?
10. Discuss the shape of following molecule on the basis of hybridization.
 - i) CH_4
 - ii) $\text{CH}_2=\text{CH}_2$
 - iii) $\text{HC}\equiv\text{CH}$
11. Explain the term hybridization taking $\text{CH}\equiv\text{CH}$ as an example.
12. What are the main points of similarity and difference between valence bond theory and molecular orbital theory?