



EXAMINATION MATERIAL OF ZUEB 2021-2022

GRADE: XI

SUBJECT: CHEMISTRY

SECTION # B
SHORT ANSWER QUESTION

CHAPTER # 01 FUNDAMENTAL CONCEPT OF CHEMISTRY

TOPICS:	1.5 Limiting reactant
	1.6 Empirical and molecular formula
	1.8 Calculation on chemical equation based

1. Write down the differences between empirical and molecular formula.
2. Complete the combustion of CH₄ given in reaction,
$$\text{CH}_4 + 2\text{O}_2 \text{ -----} \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$$

Calculate volume of O₂ gas react at S.T.P with the combustion of **10.6 gm.** of CH₄.
3. What is the molecular formula of a compound that contains **80%** carbon **20%** hydrogen?
Its molecular mass is **45g.**

CHAPTER # 03 ATOMIC STRUCTURES

TOPICS:	3.4 Radioactivity
	3.5 Chadwick Experiment
	3.7 Plank's Quantum Theory
	3.8 Spectra
	3.12 Bohr's theory & Hydrogen atom
	3.15 Heisenberg's Uncertainty Principle
	3.16 Energy Level
	3.17 Orbitals & Quantum number
	3.18 Pauli's Exclusion Principle
	3.19 Shapes of Orbitals
	3.20 Electronic configuration

1. Define radioactivity. Describe the characteristics of alpha and beta radiation.
2. How neutron discovered by James Chadwick.
3. Write down the main postulates of plank's quantum theory.
4. Write a short note on quantum number **or** quantum laws.
5. Write the electronic configuration of the following and describe the shape of last sub shell of **b** & **c** also give the number of proton and electron in each of the following:
(a) Cu (Z=29) (b) Mg^{+2} (Z= 12) (c) Cl^- (Z =17)
6. Calculate the radius and angular momentum of **3rd orbit** of a hydrogen atom.
7. Arrange the following orbitals according to increasing energy orbitals **3s, 1s, 3d, 5p, 2p, 2s, 4s, 3p, 4d, 4p**

CHAPTER # 04 CHEMICAL BONDING

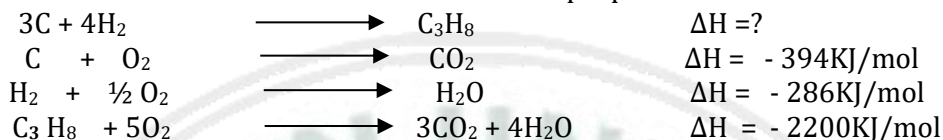
TOPICS:	4.5 Dipole Moment
	4.7 Bond Energy
	4.8 Sigma & Pi-Bond
	4.11 Hydrogen Bonding

1. Define and explain dipole moment with its factors.
2. Define Bond energy with its factors.
3. Write down the differences between sigma bond and pi-bond.
4. Write a short note on hydrogen bonding.

CHAPTER # 05 CHEMICAL ENERGETICS

TOPICS:	5.1 Thermodynamic system
	5.5 Hess's Law
	5.6 Heat of Formation

1. Calculate the heat of formation for the formation of propane.



2. State and explain Hess's law of heat summation.
3. When **5000J** of heat is added to a system at constant pressure of **101300 N/m²**, its internal energy increased by **520J** calculates the change in volume.

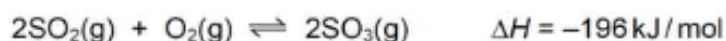
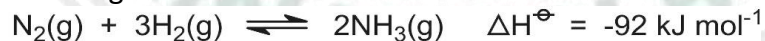
CHAPTER # 06 CHEMICAL EQUILIBRIUM

TOPICS:	6.2 Equilibrium state
	6.3 The Law of Mass Action (Equilibrium Law)
	6.4 Determination of Equilibrium constant
	6.5 Application of The Law of Equilibrium
	6.6 Le-Chatelier's Principle
	6.7 Industrial Application of Le-Chatelier's Principle
	6.8 Solubility Product

1. State the law of equilibrium. Derive the expression of K_c from the following reaction.



2. Write down the applications of equilibrium constant.
3. State Le-Chatelier's principle? Explain the effect of increasing pressure and temperature on the following reactions.



4. Define solubility product. Derive expression of solubility product by using example of AgCl.
5. Will PbCrO_4 precipitate out in the solution by mixing **100cm³** of **2.0 x 10⁻⁶M Pb(CH₃COO)₂** and **900cm³** of **1.5 x 10⁻⁸M Na₂CrO₄**? (K_{sp} of PbCrO_4 is **1.8 x 10⁻¹⁴ mol³/dm⁶**).
6. The solubility of calcium oxalate (CaC_2O_4) is **0.0016 g/dm³** at 25°C. Find the solubility product CaC_2O_4 . (Molar mass of CaC_2O_4 is **128g/mol**).
7. How many moles of ester are formed at equilibrium when **3** moles of alcohol are mixed with **1** mole of acid initially? ($K_c = 4$) . $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \rightleftharpoons \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$

CHAPTER # 07 SOLUTION & ELECTROLYTES

TOPICS:	7.2 Hydration
	7.3 Hydrolysis
	7.7 Oxidation number
	7.8 Oxidation & Reduction Reactions
	7.10 Indicators
	7.12 PH

1. Define the process of hydrolysis.
2. Write down the differences between hydration & hydrolysis.
3. Write a short note on indicators.
4. Define pH and pOH. Calculate the $[H^+]$ and $[OH^-]$ ion concentration of a solution having pH equal 7.86?
5. Calculate the pH of $2.5 \times 10^{-2}M$ NH_4OH solution. Which is 10% ionize.
6. Show that $pH + pOH = 14$.
7. Give the oxidation number of:
(a) Cr in $K_2Cr_2O_7$ (b) O in OF_2 (c) Mn in MnO_4^{-1} (d) N in NCl_3

CHAPTER # 08 CHEMICAL KINETICS

TOPICS:	8.2 Rate Constant & Rate Expression
	8.3 Types of Reaction
	8.4 Factors Affecting Rate of reaction

1. The rate constant for the decomposition of nitrogen dioxide is $1.8 \times 10^{-3} \text{ dm}^3\text{M}^{-1}\text{S}^{-1}$
- $$2\text{NO}_2 \longrightarrow 2\text{NO} + \text{O}_2$$

- Write down the rate expression
 - Find the initial rate when the initial concentration of NO_2 is **0.75M**.
 - Find the rate constant when the initial concentration of NO_2 doubled.
2. Write the rate expression, find the value of rate constant and determine the order of reaction using the following data:

S. No.	[NO]	[O ₂]	Rate
1.	0.1M	0.1M	$2 \times 10^{-3} \text{ M.s}^{-1}$
2.	0.2M	0.1M	$8 \times 10^{-3} \text{ M.s}^{-1}$
3.	0.1M	0.2M	$4 \times 10^{-3} \text{ M.s}^{-1}$

- What is meant by the terms Rate of reaction & Rate constant? Explain the effects of surface area of reactants & temperature on the rate of reaction.
- Write down the different types of reaction on the basis of their rates.