

B.Sc. Semester - 2 (NEP-2020) Examination

MARCH/APRIL-2025

CHE: Foundation in Chemistry (Major-3)

Time: 2 Hours

Marks: 50

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1	Answer the following questions.	(10)
	(A) Explain: Diagonal relationship of Lithium with Magnesium.	(05)
	(B) Explain Anomalous behaviour of Beryllium & its uses.	(05)
	OR	
Que.1	Answer the following questions.	(10)
	(A) Give preparation & physical properties of NaHCO_3 .	(05)
	(B) What is Inert pair effect?. Explain its relation with stability of oxidation state.	(05)
Que.2	Answer the following questions.	(10)
	(A) Write a note on E^2 elimination reaction with mechanism.	(05)
	(B) Explain Markovnikov's rule with proper examples.	(05)
	OR	
Que.2	Answer the following questions.	(10)
	(A) Write a note on E^1 elimination reaction with mechanism.	(05)
	(B) Explain: Oxymercuration-demercuration and Ozonolysis in detail.	(05)
Que.3	Answer the following questions.	(10)
	(A) Derive the equation to determine the P^{H} of hydrolysis of salt of Weak base & Strong acid.	(05)
	(B) Describe the Degree of dissociation & Factors affecting on it.	(05)
	OR	
Que.3	Answer the following questions.	(10)
	(A) Derive the equation to determine the P^{H} of Weak acid.	(05)
	(B) What is Buffer solution? Explain p^{H} of basic buffer.	(05)
Que.4	Answer the following questions.	(10)
	(A) Discuss: Diagonal relationship of Beryllium with Aluminium.	(05)
	(B) Explain Saytzeff's and Hoffmann elimination reaction for alkenes.	(05)
	OR	
Que.4	Answer the following questions.	(10)
	(A) Write preparation, properties and uses of washing soda and baking soda.	(05)
	(B) Explain Diele's Alder reaction.	(05)
Que.5	Answer the following questions.	(10)
	(A) Discuss: Formation of Alkynes by Dehydrohalogenation of vicinal dihalides and Dehalogenation of tetrahalides.	(05)
	(B) A buffer solution is made by mixing of 0.4M acetic acid and 0.6M sodium acetate, calculate the pH of resulting buffer solution. ($K_a=1.8 \times 10^{-5} \text{mol/L}$)	(05)
	OR	
Que.5	Answer the following questions.	(10)
	(A) Explain: Anti-Markownikov's rules for alkenes with mechanism.	(05)
	(B) Calculate the pH of 0.001M aqueous solution of acetic acid ($K_a=1.8 \times 10^{-5} \text{mol/L}$).	(05)
