Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (NEW)EXAMINATION – SUMMER 2015

Subject Code: 2133506 **Date: 02/06/2015**

Subject Name: Physico-Chemical Processes

Time: 02:30 pm to 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain phase rule for one component Sulphur system.	**07**
	(b)	Explain second order reaction with example.	**07**
Q.2	**(a)**	Define the term electrochemical cell. Explain Daniel cell in details	**07**
	(b)	Write a note on acid base catalysis.	**07**
		OR	
	(b)	Define the term colloids. Give the types of colloids with examples.	**07**
Q.3	**(a)**	Write a note on reversible cell.	**07**
	(b)	Define the term buffer solution. Derive Henderson's equation to calculate pH of a buffer solution. The *Ka* of propionic acid is 1.34 × 10– 5. What is the pH of a solution containing 0.5 M propionic acid, C_2H_5COOH, and 0.5 sodium propionate, C_2H_5COONa. What happens to the pH of this solution when volume is doubled by the addition of water?	**07**
		OR	
Q.3	**(a)**	Discuss salient features of lead-silver system.	**07**
	(b)	Explain theory of indicator with suitable example.	**07**
Q.4	**(a)**	Define the term catalysis. Explain homogeneous and heterogeneous catalysis with suitable examples.	**07**
	(b)	Explain the rate law, rate equation and order of reaction with suitable examples.	**07**
		OR	
Q.4	**(a)**	Define the term phase rule and explain terms used in it with examples.	**07**
	(b)	Write a note on application of colloids.	**07**
Q.5	**(a)**	Derive mathematical expression for the rate constant for first order reaction.	**07**
	(b)	Give in details methods of purification of colloids or sols.	**07**
		OR	
Q.5	**(a)**	Define the term EMF. Explain relation between free energy and EMF.	**07**
	(b)	Write a short note on common ion effect with examples.	**07**

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