Q.P. Code :00182

[Time: Three Hours] **[Marks:70]**

Please check whether you have got the right question paper.

N.B: 1. All Questions are compulsory.
2. Draw neat labelled diagrams wherever necessary.

Q.1)	a)	Calculate the pH of the following solution. I) 0.005 M HCl II) 0.01M NaOH	02
	b)	State and explain Henry's law.	03
	c)	What is order of reaction? Give equations for first order and second order reaction rate constant.	03
	d)	State the relation between surface tension and spreading coefficient. Give its application is pharmacy.	03
	e)	Give 2 examples of ion selective electrodes state their advantages.	02
	f)	What are colloids? Give their general properties.	02
Q.2)	a)	What are buffers? Write a note on biological buffer systems **OR** Explain the terms isotonic, hypertonic and hypotonic solutions. Explain any one method to adjust tonicity.	04
	b)	What is phase rule? Explain phenol water system.	04
	c)	Define specific rate constant. Derive an equation for rate constant of a second order reaction when a=b.	03
Q.3)	a)	Explain the term partition coefficient and give its applications.	04
	b)	State different methods used to determine order of reaction. Explain any two in detail **OR** State and explain Arrhenius equation. Give its significance.	04
	c)	Explain film balance apparatus. State its applications in pharmacy.	03
Q.4)	a)	What are acidic buffers? Give an example of acidic buffer and derive Henderson Hasselbalch equation for a weak acid & its salt.	04
	b)	Enlist different types of electrodes along with examples.	03
	c)	Explain different methods of preparation of colloids **OR** Explain in detail electrical properties of colloids.	04
Q.5)	a)	Explain collision theory.	03
	b)	Answer the following: i) Freundlich adsorption isotherm equation ii) Langmuir adsorption isotherm equation iii) Wetting iv) Contact angle	04
	c)	Explain protective action of colloids **OR** Define 'Gold number' and state Schultz Hardy Rule.	04
Q.6)	a)	75 minutes are required to complete 90% of a first order reaction. Calculate its half-life.	03
	b)	Enlist methods used to determine surface tension and explain any one in detail.	04
	c)	State Nernst equation. Write a note on concentration cells.	04