

Q.P. Code :00181

[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 and labelled diagrams wherever necessary.

- Q.1. a If the pH of a solution is 4.5 calculate the hydroxyl ion concentration of the solution. 2
b Discuss in detail the factors affecting solubility of gases in liquids. 3
c Define and differentiate between order and molecularity of a reaction. 3
d Explain the relation between surface active agents and HLB. 3
e Write in brief about concentration cells 2
f Define colloids and give properties of lyophobic colloids. 2
- Q.2. a Enlist the methods to adjust tonicity and explain cryoscopic method in detail. 4
OR
Define buffer capacity and give significance of pharmaceutical buffers. 4
b State Phase Rule and describe in detail a two component system. 4
c What are pseudo-order reactions. Derive an equation for rate constant of a first order reaction. 3
- Q.3. a Define partition coefficient and discuss its applications. 4
b Explain Half-life method and graphical method to determine order of reaction. 4
OR
Explain the relation between temperature and rate of reaction. 4
c State and explain Gibbs adsorption equation and define 'surface excess'. 3
- Q.4. a Explain Bronsted – Lowry Theory of Acids and Bases and state the Henderson –Hasselbalch equation of an acidic buffer and a basic buffer. 4
b Write a note on Calomel Reference Electrode. 3
c Write a note on kinetic properties of colloids. 4
OR
Discuss the methods of preparation of colloids. 4
- Q.5. a Explain the applications of Accelerated stability studies. 3
b i) What is an adsorption isotherm and state equation for Langmuir isotherm. 2
ii) Differentiate between physical and chemical adsorption. 2
c Define 'Gold Number' and 'Schultz Hardy Rule' 4
OR
Write a note on protective colloids. 4
- Q.6. a A first order reaction is one fifth completed in 40 mins. Calculate the time required for its 90% completion. 3
b Define Interfacial tension and Explain Du Nuoy Tensiometer in detail. 4
c State Nernst equation and write a note on glass electrode. 4