

QP Code: D 122730		Total Pages: 2	Name:
			Register No.
SECOND SEMESTER (CUFYUGP) DEGREE EXAMINATION APRIL 2025			
(CHEMISTRY)			
CHE2MN102 : LIQUID STATE, GASEOUS STATE AND ELECTROCHEMISTRY			
2024 Admission onwards			
Maximum Time: 2 Hours			Maximum Marks: 70
Section A			
All Questions can be answered. Each Question carries 3 marks (Ceiling: 24 Marks)			
1	Explain the term surface tension of a liquid. Describe the cause of surface tension.		
2	Describe Henry's law and its applications.		
3	Explain the origin of colligative properties. Why do they not depend on the chemical identity of the solute?		
4	Explain the terms i) collision diameter ii) collision number iii) most probable velocity		
5	Discuss the effect of temperature and pressure on the viscosity of a gas.		
6	Write the virial equation of state of a real gas. Comment briefly.		
7	What is the significance of the critical constants?		
8	Define the following terms in connection with electrolytes. i) specific conductance ii) molar conductance iii) equivalent conductance.		
9	Explain Kohlrausch's law. Mention its important application.		
10	Calculate the molal freezing point depression constant of water. The molar heat of fusion of ice at 0°C is 6024.6 J.		
Section B			
All Questions can be answered. Each Question carries 6 marks (Ceiling: 36 Marks)			
11	Define the term vapour pressure of a liquid. Explain why the vapour pressure of a liquid increases with increase in temperature and why a liquid cool down on evaporation.		
12	Explain i) characteristics of gases ii) relationship between critical constants and van der Waals constants.		
13	Explain postulates of the kinetic theory of gases.		
14	How will you determine the collision diameter from the measurement of the coefficient of viscosity?		
15	Explain briefly about P – V isotherms of a real gas.		

16	Explain the basic principle of conductometric titrations. What are its advantages over the conventional methods?
17	a) What is meant by van't Hoff factor? b) 1.51 g of NaCl was dissolved in 500 g of water and the elevation in boiling point was observed to be 0.0514°C . Calculate the van't Hoff factor. K_b for water = $0.52 \text{ K kg mol}^{-1}$
18	A certain gas obeys the van der Waals equation with $a = 0.76 \text{ m}^6 \text{ Pa mol}^{-2}$. Its volume is found to be $4.00 \times 10^{-4} \text{ m}^3 \text{ mol}^{-1}$ at 288 K and 4.0 MPa. From this information calculate the van der Waals constant b. What is the compression factor for this gas at the prevailing temperature and pressure?
Section C	
Answer any ONE. Each Question carries 10 marks (1×10 = 10 Marks)	
19	What are liquid crystals ? Explain the structures and main characteristics of different types of liquid crystals. List out the applications of liquid crystals.
20	Explain the following: a) Standard Hydrogen electrode. b) Calomel electrode. c) $\text{H}_2 - \text{O}_2$ fuel cell.