

SECOND SEMESTER UG DEGREE EXAMINATION, APRIL 2026

(FYUGP)

(Regular/Supplementary/Improvement)

CC24UCHE2MN105 - SOLUTIONS AND SURFACE CHEMISTRY

(Chemistry - Minor Course)

(2024 Admission onwards)

Time: 2.0 Hours

Maximum: 70 Marks

Credit: 4

Part A (Short answer questions)Answer *all* questions. Each question carries 3 marks.

1. Explain osmotic pressure and its variation with temperature. [Level:2] [CO1]
2. A mixture contains 3.2g methanol (Molecular mass = 32u) and 4.6 g ethanol (Molecular mass = 46u), Compute the mole fraction of each component. [Level:3] [CO1]
3. Explain the term liquid crystals. [Level:2] [CO1]
4. Explain delta formation. [Level:2] [CO2]
5. Define zeta potential. [Level:2] [CO2]
6. Discuss two methods used generally for the purification of sols. [Level:2] [CO2]
7. Express the Langmuir adsorption equation and specify the terms. [Level:2] [CO3]
8. Give an example for enzyme catalysis. [Level:1] [CO3]
9. Explain the term stationary and mobile phases in partition column chromatography. [Level:2] [CO4]
10. Explain the basic principle behind solvent extraction. [Level:2] [CO4]

(Ceiling: 24 Marks)**Part B** (Paragraph questions/Problem)Answer *all* questions. Each question carries 6 marks.

11. Explain the variation of vapour pressure of a liquid with temperature and derive the equation of dependence of vapour pressure on temperature. [Level:2] [CO1]
12. Calculate the vapour pressure of an aqueous solution of urea (CON_2H_4) containing 5g of urea in 100g of the solution. The vapour pressure of pure water at 298K is 23.75mm. [Level:2] [CO1]

13. Explain in detail the term associated colloids. [Level:2] [CO2]
14. Explain the stability of sols. [Level:2] [CO2]
15. How can physisorption be experimentally distinguished from chemisorption? [Level:2] [CO3]
16. Explain the terms catalytic promoter and catalytic poison with an example each. [Level:2] [CO3]
17. Mention three applications of adsorption. [Level:2] [CO3]
18. Explain the general principle of chromatography. [Level:2] [CO4]

(Ceiling: 36 Marks)

Part C (Essay questions)

Answer any **one** question. The question carries 10 marks.

19. What are the characteristics of an ideal solution? Explain the kinds of deviations observed for binary miscible liquid system from ideal behaviour. [Level:2] [CO1]
20. Describe the paper chromatographic technique in terms of its principle and process. [Level:2] [CO4]

(1 × 10 = 10 Marks)
