

Home Assignment
FYUGP Semester I
Subject: Chemistry
Paper: Chemistry-I
Session: 2026-27 (Odd semester)

A. Physical Part:

1. What is significance of Boyle's Temperature. 2
2. Describe the capillary tube method for determination of surface tension of a liquid. 3
3. What is micelle and Critical Micelle Concentration? Discuss the mechanism of cleaning action of Soap. 5
4. The radius of a given capillary is 0.01 cm. A liquid whose density is 0.05g/ml rises to height of 2 cm in the capillary when it dipped in a liquid. Calculate the surface tension of the liquid. 2
5. Calculate the temperature at which 10 moles of CO₂ gas (assuming that it is a van der waals gas) occupies a volume of 5.0 dm³ under a pressure of 50.0 atm. Given $a = 3.59 \text{ dm}^6 \text{atmmol}^{-2}$, $b = 0.043 \text{ dm}^3 \text{mol}^{-1}$. 5
6. What is Trauton's rule? Give a method for determination of vapour pressure. 5
7. Define surface tension. What is the effect of temperature and pressure on surface tension of a liquid. 3
8. Describe one method of determining viscosity of liquids. 3
9. What are the factors which determine viscosity of liquids. 2
10. In the determination of surface tension of a liquid by the drop-number method, it gives 50 drops while water gave 25 drops for the same volume. The densities of the liquid and water are 0.900 and 0.800 g/cm³ respectively. Find the surface tension of the liquid if that of water 72.0 dynes/cm. 3

B. Organic part:

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1. How does hybridization affect the bonding and structure of a molecule?
2. Draw the conformers of butane and cyclohexane with energy profile diagram.
3. Explain effect of inductive effect on acidity and basicity.

Note: 1. Submit the assignment to the department on or before 30th October, 2026.
2. Write your Name, Enrolment no in the front page of your assignment.