



K24U 2720

Reg. No. :

Name :

V Semester B.Sc. Degree (C.B.C.S.S. – O.B.E. – Regular/Supplementary/
Improvement) Examination, November 2024
(2019 to 2022 Admissions)
CORE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
5B09CHE/PCH : Physical Chemistry – I

Time : 3 Hours

Max. Marks : 40

SECTION – A

Answer **all** questions. **Each** question carries **1** mark.

1. Define compressibility factor of an ideal gas.
2. How viscosity of a liquid depends on temperature ?
3. Write any two applications of liquid crystals.
4. What is the reason for the abnormal molar mass ? (4×1=4)

SECTION – B

Answer **any 7** questions. **Each** question carries **2** marks.

5. What is Boyel's temperature ? How it is related to Van der Waal's constants ?
 6. Differentiate between Frenkel and Schottky defects.
 7. Why potassium chloride crystals show abnormal X-ray diffraction patterns ?
 8. How steam distillation differs from ordinary distillation ?
 9. What is Henry's Law ? Explain.
 10. Explain space lattice and unit cell.
 11. What is Trouton's rule ? Explain.
 12. Explain interfacial tension.
 13. What is collision diameter ? How it is related to molecular mass ?
 14. Explain Charles law. (7×2=14)
- P.T.O.

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SECTION – C

Answer **any 4** questions. **Each** question carries **3** marks.

15. Explain the liquefaction of gases using Joule-Thomson effect.
16. How surface tension is determined using stalenometer ? Explain.
17. Write a short note on the crystal structure of NaCl.
18. Briefly discuss the laws of crystallography.
19. Write a short note on ideal and non-ideal solutions.
20. Derive Bragg's equation. (4×3=12)

SECTION – D

Answer **any 2** questions. **Each** question carries **5** marks.

21. Explain :
 - i) Determination of osmotic pressure by Berkely and Hartly method.
 - ii) Importance of azeotropes in chemistry.
22. Discuss :
 - i) Close packing in solids.
 - ii) The number of particles per unit cell in (i) simple cubic, (ii) body centered cubic and (iii) face centered cubic systems.
23. Describe :
 - i) Vacancy theory and free volume theory of liquids.
 - ii) Working of Abbe's refractometer.
24. Explain :
 - i) Equipartition theory and their contribution towards heat capacity.
 - ii) Determination of molecular mass by limiting density method. (2×5=10)