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Roll No. .....

PAPER ID—13648

B.Sc. EXAMINATION, 2023

(First Semester)

CHEMISTRY-II

Code : CH-102

Physical Chemistry

Time : 3 *Hours* *Maximum Marks* : 29

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Section. Q. No. **1** is compulsory.

1. (a) Define Mean free path.

(b) Define inversion temperature.

(c) What is critical temperature ?

(d) What is BET equation ?

(e) Define the term Viscosity. 1×5=5

Section A

2. (a) Derive van der Waal Equation. 3

(b) Differentiate between Ideal gas and Real gas. 3

3. (a) Define the following terms : 3

(i) Collision Number

(ii) Collision Diameter

(iii) Collision Frequency.

(b) Explain Maxwell distribution of velocities. 3

Section B

4. (a) Define the following terms : 3

(i) Critical Temperature

(ii) Critical Pressure

(iii) Critical Volume.

(b) To derive $T_C = 8a/27Rb$ from van der Waal Equation. 3

5. (a) Explain the relation between critical constant and van der Waal constant. 3

(b) Explain the following : 3

(i) Liquification of gases.

(ii) The Law of Corresponding States.

Section C

6. (a) Define Viscosity and coefficient of Viscosity. How Viscosity varies with temperature ? 3

(b) What is Surface Tension ? How is it measured ? 3

7. Explain the following terms : 2×3=6

(a) Parachor

(b) Vapour Pressure

(b) Optical rotation.

Section D

8. (a) Derive Bragg's Equation. 3

(b) Explain the types of Liquid Crystal. 3

9. (a) Describe the Seven crystal system with examples. 3

(b) Differentiate between space lattice, unit cell and bravais lattices. 3