

Roll No.

Total Pages : 3

325404

May-2026

B.Sc. (Life Sciences) - IV SEMESTER

Physical Chemistry-I (OSU-202-V)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) Write about the collision frequency. (1.5)
- (b) What is the law of equipartition of energy? (1.5)
- (c) Discuss the concept of continuity of states. (1.5)
- (d) Give a note on surface tension of liquids. (1.5)
- (e) How can the coefficient of viscosity be determined? (1.5)
- (f) Present the law of rational indices. (1.5)
- (g) Notify the Bragg's law. (1.5)
- (h) Briefly explain with examples, the different types of electrolytes. (1.5)

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- (i) Discuss the common ion effect. (1.5)
(j) Compose a note on Buffer solutions. (L5)

PART-B

2. (a) Discuss about the viscosity of gases and its dependence on temperature and pressure. (8)
(b) Explore the significance of Maxwell distribution and its use in evaluating molecular velocities. (7)
3. (a) What do you understand by the deviations of the gases from ideal gas behavior? Give reasons of the deviation. (11)
(b) Comment on the compressibility factor Z. (4)
4. (a) How will you determine the vapor pressure and surface tension of liquids? Also present the effect of addition of solute on surface tension. (10)
(b) Describe the cleansing action of detergents. (5)
5. (a) Give the details of symmetry elements and symmetry operations. (10)
(b) Analyze the powder diffraction pattern of KCl. (5)
6. (a) Enumerate the various factors affecting the degree of ionization. (8)
(b) Explain the ionization of weak acids and bases. (7)

7. (a) Derive Henderson equation and give its applications. (8)
(b) Explain the quantitative treatment of acid-base titration curves. (7)