

Unit II

4. (a) Cu^+ and Na^+ are of same size but CuCl is insoluble while NaCl is soluble in water. Explain. 2
- (b) What is metal-excess defect in non-stoichiometric crystals and its consequences ? 2
5. (a) What is Fajan's Rule ? How do they help in deciding covalent character in bond ? 2
- (b) Write a short note on Schottky Defect. 2

Unit III

6. (a) Define Localised Chemical Bond and Delocalised Chemical Bond. Explain the latter in detail with the help of a suitable example. 2

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B.Sc. (NEP-2020) EXAMINATION, 2025

(Second Semester)

MINOR CHEMISTRY-II

B23-CHE-202

Time : 3 Hours]

[Maximum Marks : 20

Before answering the question-paper, candidates must ensure that they have been supplied with 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 Unit. Q. No. 1 is compulsory. Each question carries equal marks.

(Compulsory Question)

1. (a) Why is electron affinity of fluorine less than that of chlorine ?
- (b) Which out of CdCl_2 and NaCl will produce Schottky defect if added to AgCl crystal.
- (c) Arrange the following in decreasing order of $-I$ effect :
- $-\text{C}_6\text{H}_5$, $-\text{NO}_2$, $-\text{COOH}$, $-\text{CN}$, $-\text{I}$, $-\text{F}$,
 $-\text{Br}$, $-\text{Cl}$
- (d) Define Collision diameter and Mean Free Path. **1×4=4**

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Unit I

2. (a) Using Slater's Rule, calculate effective nuclear charge of : **2**
- (i) 4s electron in Zinc
- (ii) 3d electron in Iron.
- (b) Carbon possesses different-electro negativity in C_2H_6 , C_2H_4 and C_2H_2 . Comment and justify. **2**
3. (a) The Inter-nuclear distance in KCl is $3.14 \text{ \AA}$. Calculate ionic radii of K^+ and Cl^- using Pauling method. **2**
- (b) Why is ionization energy of B less than that of Be and of oxygen is less than that of nitrogen ? **2**

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9. (a) At 0°C and 1 atmosphere pressure
molecular diameter of a gas is $4 \times 10^{-8} \text{ cm}$.

Calculate the mean free path of molecule.

2

- (b) Write expressions for most probable
velocity, average velocity, root mean
square velocity and calculate the ratio
among these.

2



- (b) What is Hyper-conjugation Effect ? How
does it differ from Resonance ?

2

7. (a) Define van der Waals' forces and factors
affecting it.

2

- (b) What is meant by inductive effect ? How
does it help in explaining the relative
acidic strength of organic acids ?

2

Unit IV

8. (a) Discuss the effect of temperature and
pressure on collision frequency.

2

- (b) Write a detailed account on kinetic theory
of fases.

2