

FOUR YEAR B.Sc. HONOURS DEGREE EXAMINATION,
JUNE/JULY - 2024

CHOICE BASED CREDIT SYSTEM

SECOND SEMESTER - MINOR

PART - II : CHEMISTRY

PAPER 3 - GENERAL AND INORGANIC CHEMISTRY

(Under CBCS New Regulation w.e.f. the Academic Year 2023-24)

Time : 3 Hours

Max. Marks : 75

SECTION - A

Answer any FIVE of the following questions. Each question carries 5 marks. (5×5=25)

1. Explain Pauli's exclusion principle.
2. Explain the diagonal relationship in periodic table.
3. Explain Fajan's rule with suitable examples.
4. Write the differences between ionic compounds and covalent compounds.
5. Explain isoelectronic species with example.
6. Write the comparison between atomic orbitals and molecular orbitals.
7. Explain hydrogen bonding and its types.
8. Explain free electron theory of metals.
9. Define the terms P^h , P^k_a and P^k_b .
10. Explain conjugate acid-base pairs.

SECTION - B

Answer All the questions. Each question carries 10 marks.

(5×10=50)

11. a) Write the postulates of Bohr's model of an atom and its limitations.

(OR)

- b) Explain Heisenberg uncertainty principle and write Schrodinger equation?

12. a) Explain the Born-Haber cycle enthalpy of formation of ionic compound.

(OR)

b) Explain about the factors favouring the formation of Ionic compounds.

13. a) Explain the Salient features of Valence bond theory in covalent bond.

(OR)

b) Draw the Molecular Orbital diagram of CO and NO and give their bond order and magnetic properties.

14. a) Explain about the band theory of metals.

(OR)

b) Write the properties of hydrogen bonded N, O and F compounds.

15. a) Explain Pearson's HSAB principle and its limits.

(OR)

b) Explain about the non-aqueous solvents and its types.

FOUR YEAR B.Sc. HONOURS DEGREE EXAMINATION,

JUNE/JULY -2024

CHOICE BASED CREDIT SYSTEM

SECOND SEMESTER - MAJOR

PART - II : CHEMISTRY

PAPER - 4 : INORGANIC CHEMISTRY

(Under CBCS New Regulation w.e.f. the academic year 2023-24)

Time : 3 Hours

Max. Marks : 75

SECTION - A

Answer any **Five** of the following questions. Each question carries **equal** marks. **(5×5=25)**

1. Write about the structure of diborane.
2. Write any two preparations and uses of silanes.
3. Write the structures of oxy-acids of sulphur.
4. Write about the interhalogen compounds.
5. Write a note on catalytic property of d-block elements.
6. Write about the Latimer diagrams of transition elements.
7. Write about the oxidation states of actinides.
8. What is meant by lanthanide contraction and give its consequences.
9. Write about the radio active decay series.
10. Write the applications of radioactive isotopes.

SECTION - B

Answer **All** the questions. Each question carries **10** marks.

(5×10=50)

11. a) Write about the preparation and structure of Phosphonitric chloride $P_3N_3Cl_6$.

(OR)

- b) What are Silicones? Give their general methods of preparation, properties and uses.

12. a) Explain the classification of oxides based on chemical behaviour and oxygen content.

(OR)

b) Explain about pseudohalogens, pseudohalides and their uses.

13. a) Explain the electronic configuration of 3d, 4d and 5d transition series.

(OR)

b) Write about the characteristics, variable valency and magnetic properties of d-block elements.

14. a) Explain the separation of lanthanides by ion exchange method.

(OR)

b) What are inner transition elements and explain electronic configurations of lanthanides and actinides.

15. a) Explain about Nuclear fusion and Nuclear fission.

(OR)

b) Explain about Soddy - Farjan's displacement law and stability based on n/p ratio.
