

MODEL PAPER
FIRST YEAR B.Sc., DEGREE EXAMINATION
SEMESTER-I
CHEMISTRY Course-I: INORGANIC & PHYSICAL CHEMISTRY

Time: 3 hours

Maximum Marks: 75

PART- A 5 X 5 = 25 Marks

Answer any **FIVE** of the following questions. Each carries **FIVE** marks

1. Explain the preparation & structures of Phosphonitrilic compounds.
2. Explain in brief, catalytic properties & stability of various oxidation states of d-block elements.
3. Write short note on Bravais lattices and crystal systems.
4. What are Smectic & Nematic liquid Crystals? Explain.
5. Write account on Common ion effect & Solubility product.
6. Describe Andrew's isotherms of carbon dioxide.
7. Explain Actinide Contraction.
8. Explain the structure of Borazine.

PART- B (Inorganic Chemistry) 2 X 10 = 20 Marks

Answer **any two** of the following questions. Each carries **TEN** marks

9. Explain Classification, Preparations & uses of Silicones
10. (i) What are Pseudohalogens.
(ii) Explain the Structures of any one AX₃ & AX₅ interhalogen compounds.
11. What is Lanthanide Contraction? Explain the Consequences of Lanthanide Contraction.
12. (i) Explain the magnetic properties of d- block elements.
(ii) Explain about Conductors, Semi-Conductors & Insulators using Band Theory.

PART- C (Physical Chemistry) 3 X 10 = 30 Marks Answer

any three of the following questions. Each carries **TEN** marks

13. Write an essay on Crystal defects.
14. What is Bragg's Law. Explain the determination of structure of a crystal by powder method.
15. Derive the relationship between Critical constants & Vanderwaal constants
16. (i) Write any 5 differences between liquid crystals & liquids, solids

- (ii) Write the applications of Liquid crystals.
17. Explain Nernst distribution Law. Explain its applications
18. What are colligative properties. Write experimental methods for determination of molar mass of a non-volatile solute by using Elevation in boiling point & depression in freezing point.
