

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

Time: 3 hours

Maximum Marks: 75

**PART- A5 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- B5 X 10 = 50 Marks**

Answer **ALL** the questions. Each carries **TEN** marks

- 9 (a). Explain Classification, Preparations & uses of Silicones

(or)

- (b). (i) What are Pseudohalogens.  
(ii) Explain the Structures of any one AX<sub>3</sub> & AX<sub>5</sub> interhalogen compounds.

- 10 (a). What is Lanthanide Contraction? Explain the Consequences of Lanthanide Contraction.

(or)

- (b). (i) Explain the magnetic properties of d- block elements.  
(ii) Explain about Conductors, Semi-Conductors & Insulators using Band Theory.

- 11.(a). Write an essay on Crystal defects.

(or)

- (b). What is Bragg's Law. Explain the determination of structure of a crystal by powder method.

- 12.(a). Derive the relationship between Critical constants & Vanderwaal constants

(or)

- (b).(i) Write any 5 differences between liquid crystals & liquids, solids  
(ii) Write the applications of Liquid crystals.

- 13.(a). Explain Nernst distribution Law. Explain its applications

(or)

- (b). 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.

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