

M.Sc. DEGREE END SEMESTER EXAMINATION - OCTOBER 2025**SEMESTER – 3: CHEMISTRY****COURSE: 24P3CHET09 - INORGANIC CHEMISTRY III***(Regular 2024 Admission))*

Time: Three Hours

Max. Weights: 30

PART A**Answer any 8 questions****Weight: 1**

1. Explain spinels and inverse spinels with suitable example. (U, CO1)
2. Distinguish between piezo electricity and pyroelectricity? (R, CO2)
3. Describe solid electrolytes with suitable examples. (U, CO1)
4. What are the important medical applications of boron clusters? (U, CO4)
5. Name any two polymers with organometallic moieties as pendant groups? (A, CO3)
6. Explain briefly about the data storage applications of nanomaterials. (U, CO4)
7. Describe briefly Type - I and Type - II superconductors. (U, CO2)
8. What are phosphazines? Give two examples (A, CO3)
9. How can you account for the superconductivity in fullerenes? (U, CO4)
10. Explain Martensitic transformation. (U, CO1)

(1 x 8 = 8)**PART B****Answer any 6 questions****Weight: 2**

11. What are the important classifications of phase transitions in solids? (U, CO1)
12. Write down the mechanism of intrinsic and extrinsic semiconductors. (R, CO2)
13. Discuss the structure and bonding of cage-like structure of phosphorus. (A, CO3)
14. Discuss the applications of carboranes in drug design. (A, CO3)
15. Explain the synthesis of (a) zeolites and (b) amorphous silica. (A, CO4)
16. Write a short notes on the synthesis of thin films. (U, CO4)
17. Explain the magnetic properties of transition metal oxides. (R, CO2)
18. How can you grow a single crystal from the melt? (U, CO4)

(2 x 6 = 12)**PART C****Answer any 2 questions****Weight: 5**

19. Briefly describe the superconducting properties of YBaCu oxide system. (R, CO2)
20. Explain in detail diffusion in solids with reference to the different mechanisms and relevant equation. (U, CO1)
21. Give an account on silicate minerals and different types of silicates with structure. (A, CO3)
22. Discuss (a) condensation polymers based on ferrocene. (U, CO4)
- (b) organometallic polymers prepared by ring opening polymerization. (A, CO3)

(2 x 5 = 10)
