

QP CODE: 25047478



Reg No :

Name :

M.Sc DEGREE (CSS) EXAMINATION, NOVEMBER 2025

Third Semester

Core Course - CH500301 - STRUCTURAL INORGANIC CHEMISTRY

M.Sc CHEMISTRY, M.Sc ANALYTICAL CHEMISTRY, M.Sc POLYMER CHEMISTRY

2019 ADMISSION ONWARDS

AC1B5B31

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. What are the consequences of defects in crystals?
2. What is Hall effect?
3. Explain Piezoelectricity.
4. What are High Temperature Superconductors?
5. What are Polythiazyls? Why are they called one-dimensional conductors?
6. What are mercuride clusters?
7. What are rigid-rod organometallic polymers ?
8. What is topotaxy?
9. What is thin film? What are its uses?
10. How does magnetic nanoparticles act as contrast agents in MRI?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Write a note on diffusion in solid state reactions and the different mechanisms involved in diffusion.
12. Explain first order phase transitions in solids using a suitable example.
13. Write a brief note on free electron theory of metallic bonding and its disadvantages.
14. Explain the applications of fullerenes and carbon nanotubes.
15. Write a short note on the isopoly acids of Tungsten.





16. Explain the structure and bonding in Sulphur-Nitrogen compounds.
17. Discuss about Boron cages.
18. Write a short note on the application of C_2B_{10} as nucleic acid precursors and DNA binders .

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Explain different single crystal growth techniques.
20. Elaborate on the working of solar cells.
21. Write notes on:
 - a) Thermal Ring-opening Polymerization.
 - b) Anionic Ring-opening Polymerization.
 - c) Transition Metal Catalyzed Ring-opening Polymerization.
22.
 - a) Briefly explain synthesis of amorphous silica and diamond films.
 - b) What are Magnetic nanoparticles and superparamagnetism?

(2×5=10 weightage)

