



QP CODE: 22000860



22000860

Reg No :

Name :

M Sc DEGREE (CSS) EXAMINATION, APRIL 2022

Third Semester

Faculty of Science

CORE - CH500301 - STRUCTURAL INORGANIC CHEMISTRY

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

2019 ADMISSION ONWARDS

521ED706

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Comment on diffusion coefficient in solid state reactions.
2. How free electron theory of solids is used to explain the conductivity of metals ?
3. What is Hall effect?
4. What are High Temperature Superconductors?
5. Discuss the properties of Polythiazyl.
6. Write any four applications of Boron Clusters?
7. Write a short note on organometallic dendrimers.
8. Discuss about indium tin oxide and its applications.
9. What is Intercalation?
10. Give a method for the synthesis of diamond films.

(8×1=8 weightage)





Part B (Short Essay/Problems)

Answer any **six** questions.

Weight 2 each.

11. Explain second order phase transitions in solids using a suitable example.
12. Describe the kinetics of phase transitions.
13. Explain Piezoelectricity, Pyroelectricity and Ferroelectricity with examples.
14. Explain Photovoltaic effects and Luminescences.
15. Write a detailed note on the isopoly acids of Vanadium and Molybdenum.
16. Explain the structure and bonding in Phosphorus-Sulphur compounds.
17. Discuss the bonding and structure of Phosphorous cages.
18. Write a short note on clusters of Lead.

(6×2=12 weightage)

Part C (Essay Type Questions)

Answer any **two** questions.

Weight 5 each.

19. a.) Briefly explain imperfections in Solids.
b.) Explain structure of Zinc sulphide.
20. What are conventional superconductors and organic superconductors, ? Explain in detail about fullerenes, carbon nanotubes and graphenes.
21. Discuss in detail about condensation polymers based on Ferrocene and on Rigid rod Polyynes.
22. a)Outline the Biomedical applications of Magnetic Nanoparticles ? b) Explain the use of magnetic nanoparticles in Magnetic Resonance Imaging (MRI) and Contrast Enhancement ?

(2×5=10 weightage)

