



QP CODE: 21000543



21000543

Reg No :

Name :

M Sc DEGREE (CSS) EXAMINATION, MARCH 2021

Third Semester

Faculty of Science

CORE - CH500301 - STRUCTURAL INORGANIC CHEMISTRY

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

2019 Admission Onwards

37E44904

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. What is spinodal decomposition?
2. Explain the origin of energy bands in crystalline solids ?
3. Differentiate between conductors, insulators and semiconductors using band structures ?
4. Explain the magnetic properties of spinels ?
5. What are Silicones and how are they prepared?
6. What is Drug design using C_2B_{10} ?
7. How is organometallic polymers prepared by ring opening?
8. How is Indium Tin Oxide coatings prepared?
9. Outline the method of synthesis of Zeolites ?
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. Describe line defects and plane defects ?
12. Write a note on diffusion in solid state reactions and the different mechanisms involved in diffusion ?
13. Explain solid state lasers ?
14. Write a note on Fullerenes, Carbon nanotubes and Graphene ?
15. Write a shortnote on Polythiazyl and its applications ?
16. Write briefly on the homocyclic ring compounds of Sulphur and Phosphorus ?
17. What are the main methods for the synthesis of cage like structures of Phosphorous ? Explain its structure and bonding ?
18. Write a short note on Mercuride clusters in amalgams ?

(6×2=12 weightage)

Part C (Essay Type Questions)

Answer any **two** questions.

Weight 5 each.

19. Differentiate first and second order transitions with example. Explain Kinetics of phase transition in detail?.
20. a) Give a brief account of High Temperature Superconductors ? b) Explain BCS theory ?
21. Outline the different methods for synthesis of Organometallic Polymers based on Rigid rod polyenes ?
22. a) Discuss in detail about Amorphous Silica and Dimond Films, their uses and synthesis ? c)What are Magnetic Nanoparticles and Superparamagnetism.?

(2×5=10 weightage)

