

QP CODE: 25804500



Reg No : .....

Name : .....

**INTEGRATED M.Sc DEGREE EXAMINATION, OCTOBER 2025**

**Ninth Semester**

INTEGRATED M.Sc BASIC SCIENCE-CHEMISTRY

**CORE - ICH9CR03 - ADVANCED PHYSICAL CHEMISTRY - III**

2020 ADMISSION ONWARDS

9BB4DDFC

Time: 3 Hours

Weightage: 30

**Part A (Short Answer Questions)**

*Answer any **eight** questions.*

*Weight 1 each.*

1. What do you mean by reciprocal lattice?
2. Explain Czochralski method of crystal growth.
3. What is the significance of Debye-Huckel Onsager equation?
4. What is mean ionic activity? Write an equation for mean ionic activity?
5. Represent an example of electrolyte concentration cell.
6. How will you determine  $\Delta G$ ,  $\Delta H$  and  $\Delta G$  of a cell?
7. What are the advantages of polarography?
8. Write a short note on application of coulometry in complex formation titrations.
9. Write a short note on the following: (a) light source and (b) photomultiplier
10. What type of information would you get from the electron diffraction of gases?

(8×1=8 weightage)

**Part B (Short Essay/Problems)**

*Answer any **six** questions.*

*Weight 2 each.*

11. Distinguish the structures of NaCl and KCl by powder method.
12. Explain Fourier synthesis.
13. Discuss triple ions and conductance minima.
14. What is meant by transfer coefficient?
15. Write a short note on capacitors.





16. Write a note on half wave potential.
17. What are the applications of amperometric titrations?
18. What is meant by fluorescence sensing?

(6×2=12 weightage)

**Part C (Essay Type Questions)**

*Answer any two questions.*

*Weight 5 each.*

19. Discuss the determination of lattice types and unit cell dimensions of three types of cubic crystals.
20. Explain the theory and working of different types of fuel cells.
21. Explain the theories of hydrogen and oxygen overvoltage.
22. Explain (a) Voltammetry (b) anodic stripping voltammetry.

(2×5=10 weightage)

