

Roll.No.

22PCHCT4010

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.

M.Sc.Chemistry - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - IV

22PCHCT4010 - Advanced Inorganic Chemistry

Total Duration : 2 Hrs. 30 Mins.

Total Marks : 60

Section B

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. With an example, explain oxidative addition.
2. Briefly explain the transport and storage of iron.
3. What are synthetic oxygen carriers? Explain.
4. Compare photonuclear and thermonuclear reactions.
5. What are Ziegler-Natta catalyst? What is its importance.
6. How does Calcium function as a hormonal messenger?
7. Write a note on nitrogen fixation.
8. Explain G.M. scintillation counters.

Section C

I - Answer any **TWO** questions ($2 \times 10 = 20$ Marks)

9. Elaborate the synthesis, structure and bonding in ferrocene.
10. Describe hydroformylation of olefins by Oxo process.
11. Discuss the function of the $Na^+ - K^+$ pump ($Na^+/K^+ - ATPase$) in biological membranes. Explain how this pump generates and maintains the essential concentration gradients of these metal ions.
12. Explain the physiological function and the critical step in the catalytic cycle of Cytochrome P-450 enzymes, detailing how the iron-heme center uses O_2 and two protons to activate the oxygen for hydroxylation.

II - Compulsory question ($1 \times 10 = 10$ Marks)

13. Elaborate the applications of tracers with reference to industry, agriculture and medicine.
