



QP CODE: 25047493



25047493

Reg No :

Name :

M.Sc DEGREE (CSS) EXAMINATION, NOVEMBER 2025

Third Semester

M Sc APPLIED CHEMISTRY

Core Course - CH030303 - PHYSICAL CHEMISTRY

2019 ADMISSION ONWARDS

60D2B90E

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Give an account of kinetics of decomposition of N_2O_5 .
2. Distinguish between general and specific H^+ ion catalysis.
3. Explain the influence of PH on enzyme catalysis.
4. Explain Temkin adsorption isotherm.
5. Explain Zeta potential.
6. Define ionic atmosphere.
7. Give the expression for Debye – Hückel limiting for aqueous solutions.
8. What is electrochemical impedance?
9. What are neurotransmitters?
10. What do you mean by pre-dissociation of a diatomic molecule?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Derive Bronsted_Bjerrum equation for reaction in solution.
12. Discuss the influence of ionic strength of solution on rate of reaction in solution.
13. Explain Flash desorption.
14. Write note on ESCA.
15. Explain the Debye – Hückel – Onsager equation for aqueous solutions.





16. Explain how the concept of activity and activity coefficient is introduced in electrolytic conductance.
17. Discuss various photophysical processes taking place in an electronically excited molecule.
18. Discuss E- type and P- type delayed fluorescence.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. Give an account o Slater's treatment of unimolecular reaction.
20. Derive Langmuir adsorption isotherm.
21. Explain Onsager equation, Wien effect and Debye – Falkenhagen effect for electrolytic conductance.
22. (a) Explain lasers and its role in chemistry. (b) Describe the photochemical dissociation of water using laser.

(2×5=10 weightage)

