



QP CODE: 25047515



25047515

Reg No :

Name :

M.Sc DEGREE (CSS) EXAMINATION, NOVEMBER 2025

Third Semester

M Sc PHARMACEUTICAL CHEMISTRY

Core Course - CH040302 - PHYSICAL CHEMISTRY

2019 ADMISSION ONWARDS

FD87C030

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Explain how the dielectric constant of medium affects the rate of reactions in solutions.
2. Write a note on Skrabal Diagrams.
3. Distinguish between rainbow scattering and glory scattering of molecular beams.
4. Explain the principle of SEM.
5. Write a note on Donnan Membrane equilibrium.
6. Explain with examples "high energy bonds" in biological systems.
7. Differentiate between internal quenching and external quenching of fluorescence.
8. Write a note on Green house effect.
9. Mention the pharmaceutical applications of TG.
10. Write a short note on the principle of AES.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Derive the expression for effect of pressure and volume on velocity of gas reactions.
12. Write a note on the influence of ionic strength of solution on the rate of reactions in solutions and derive Bronsted – Bjerrum equation.
13. A monolayer of N₂ molecule is absorbed on the surface of 1 g of an Fe/Al₂O₃ catalyst occupies 28.6 cm³ at 0⁰ C and 1 atm pressure. What is the surface area of the catalyst? The area of cross section of nitrogen molecules is 0.162 nm²





14. Write a note about the mechanism of surface catalysed bimolecular reactions.
15. Write a note on dimerization of anthracene.
16. With the invention of solar cells, we are able to transform solar energy to electrical energy. How solar energy is converted to electrical energy using solar cells?
17. Compare X-ray and neutron diffraction methods of analysis.
18. Write a note on the principle and few applications of AAS.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. (a) Derive Michaleis- Menton equation for an enzyme catalyzed reaction and discuss the variation of rate under different substrate concentration. (b) Discuss the effect of pH and temperature on enzyme catalysed reactions.
20. Briefly discuss the mechanisms of Surface Enhanced Raman Spectroscopy and discuss the SERS spectrum of 2-amino phenol.
21. What is meant by principle of microscopic reversibility? Verify Onsager reciprocal relation with the help of this principle.
22. What are Amperometric titrations ? Write about the general principles of amperometry, and application of amperometry in the qualitative analysis of anions and cations in solution.

(2×5=10 weightage)

