K24P 3089

Reg. No. : .....

Name : .....

III Semester M.Sc. Degree (C.B.C.S.S.– OBE-Regular) Examination, October 2024
(2023 Admission)
CHEMISTRY/CHEMISTRY WITH DRUG CHEMISTRY SPECIALIZATION
MSCHD03C14/MSCHE03C14 : Physical Chemistry – III

Time : 3 Hours Max. Marks : 60

SECTION – A

Short answer questions. Answer **any five** questions and **each** carries **three** marks.

1. Define zeta potential ? What are the factors affecting zeta potential ?
2. Explain sedimentation potential.
3. What is the relationship between diffusion coefficient and molecular size ? Explain.
4. Explain the primary kinetic salt effect.
5. What are chain reactions ? Explain.
6. Explain adsorption isostere. **(5×3=15)**

SECTION – B

Paragraph questions. Answer **any three** questions and **each** carries **six** marks.

7. How energy of activation is calculated theoretically ? Explain.
8. What are the factors affecting the rate of a chemical reaction ? Explain.
9. Discuss collision theory of reaction rate.
10. How Auger spectroscopy is used to investigate surfaces ? Explain.
11. Write a short note on macromolecular dynamics. **(3×6=18)**

P.T.O.

SECTION – C

Essay type questions. Answer **any three** questions and **each** carries **nine** marks.

12. Derive Michaelis-Menten equation. What are its advantages ?

13. What are fast reactions ? Explain any two methods to study the kinetics of fast reactions.

14. Derive the rate expressions for (i) parallel reactions and (ii) consecutive reactions.

15. How the surface area of solids is measured using (i) Langmuir adsorption isotherm and (ii) BET adsorption isotherm.

16. Explain the electrical properties of colloids. **(3×9=27)**

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