D 93042

(Pages : 2)

Name...................................

Reg. No...................................

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, DECEMBER 2015

(CUCSS)

Chemistry

CH 1C 04—THERMODYNAMICS, KINETICS AND CATALYSIS

(2015 Admissions)

Maximum : 36 Weightage

Time : Three Hours

Part A

*Answer **all** questions.*
Each question carries 1 weightage.

1. What is residual entropy ? How it differs from excess entropy ?

2. What is the need of third law of thermodynamics ?

3. Define thermal diffusion.

4. Write and explain Glansdorf-Pregogine equation.

5. What is explosion limit ? Explain with an example.

6. What is secondary salt effect ? Explain with an example.

7. Write the Eyring equation and write its significance.

8. What are crossed molecular beams ? Write their uses.

9. Write BET equation and explain the terms involved.

10. Distinguish between SEM and TEM.

11. What is Van't Hoff and Arrhenius intermediates ?

12. Define autocatalysis with example.

(12 × 1 = 12 weightage)

Part B

*Answer any **eight** questions.*
Each question carries 2 weightage.

13. What are the apparent exceptions to third law of thermodynamics ? Write its applications.

14. Explain how the non-ideal solutions deviate from Raoult's law.

15. Explain entropy production.

16. Explain thermo-osmosis with example.

17. Write the principle of relaxation technique.

Turn over

18. What is the effect of dielectric constant on reaction rate ?

19. Write the assumptions of collision theory.

20. What are attractive and repulsive surfaces ?

21. Distinguish between Langmuir and BET adsorption isotherms.

22. How will you determine surface area from BET equation.

23. Explain specific acid catalysis with example.

24. What are oscillating reactions ? Give an example.

(8 × 2 = 16 weightage)

Part C

Answer any two questions.
Each question carries 4 weightage.

25. Derive Duhem-Margules equation and write its applications.

26. Discuss the kinetics of chain reactions.

27. Write RK theory of unimolecular reactions.

28. Derive Michaeli's-Menton equation and explain its significance.

(2 × 4 = 8 weightage)