FIRST SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

(CUCSS PG)

CC19P CHE1 C04 – THERMODYNAMICS, KINETICS AND CATALYSIS

(Chemistry)

(2019 Admission Regular)

Time: Three Hours   Maximum: 30 Weightage

Section A

Answer any *eight* questions. Each question carries 1 weightage.

1. What is meant by steric factor?

2. Explain autocatalysis.

3. Define Chemical potential

4. Write Onsager reciprocal relation and explain the terms.

5. Explain collision theory of reaction rate.

6. Describe adsorption isotherms.

7. Write BET equation and explain the terms.

8. What is Phase transfer catalysis, explain with suitable example

9. What is meant by residual entropy?

10. What are oscillating reaction?

(8 x 1 = 8 Weightage)

Section B

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

11. What is primary salt effect? Explain.

12. Give a brief account on enzyme catalysis.

13. Write the decomposition kinetics of acetaldehyde.

14. What are the factors effecting reaction rates on solution?

15. Explain the term fugacity and the method for determination the same.

16. Briefly explain activated complex theory.

17. Describe mercury intrusion method for the determination of surface area.

18. Discuss the role of bistability with respect to Oregonator mechanism.

(6 x 2 = 12 Weightage)

Section C

Answer any *two* questions. Each question carries 5 weightage.

19. a) Explain Rice-Herzfield Mechanism.

    b) Explain Lindemann`s theory unimolecular reaction.

20. Discuss the various methods for the preparation of heterogeneous catalysts.

21. Discuss the $H_2 - O_2$ reaction mechanism and derive the rate law. Explain the various explosion limits.

22. Derive Duhem-Margules equation and its applications.

(2 x 5 = 10 Weightage)

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