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42

(Pages : 2)

Name.....

Reg. No.....

SECOND SEMESTER M.A./M.Sc./M.Com. DEGREE EXAMINATION
JUNE 2020

(CBCSS)

Chemistry

CHE 2C 08—ELECTRO CHEMISTRY, SOLID STATE CHEMISTRY AND STATISTICAL THERMODYNAMICS

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

Section A

Answer **eight** *questions.*
Each question carries a weight of 1.

1. Define mean ionic activity co-efficient.
2. Write electrode reactions for Nc–Cd cell.
3. What is activation over potential ?
4. In polarography excess KCl is added. Why ?
5. Explain the terms :
   (a) Screw axis.
   (b) Glide plane.
6. Explain the origin of color centers in solids.
7. Find residual entropy of CO if 50% of CO units are in CO orientation and 50% are in OC orientation.
8. The ortho-para ratio of molecular hydrogen is 3:1. Justify the observation.
9. State and explain Dulong Petit's law.
10. What do you mean by dilute system condition ?

(8 × 1 = 8 weightage)

Section B

Answer **six** *questions.*
Each question carries a weight of 2.

11. State Debye Hückel limiting law. How is it verified ?
12. Discuss the working of a lead-acid battery.

Turn over

13. What are the models of electrical double layer at solid-liquid interface ? Discuss.

14. Briefly discuss Cooper theory of superconductivity.

15. How would you evaluate equilibrium constant from molecular parameters ? Discuss.

16. Derive an equation for vibrational contribution towards heat capacity of gases.

17. Derive Fermi Dirac distribution law.

18. Discuss Bose Einstein condensation.

(6 × 2 = 12 weightage)

Section C

Answer **two** *questions.*

Each question carries a weight of 5.

19. (a) Derive Brönsted Bjerrum relationship.

    (b) Discuss the working of H_2–O_2 fuel cell.

20. Discuss theory and applications of polarography.

21. Write a brief account of imperfections in solids.

22. Define partition function. How is it related to ?

    (a) Entropy.

    (b) Gibbs free energy.

    (c) Equilibrium constant of a reaction.

(2 × 5 = 10 weightage