SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2022
(CBCSS - PG)
(Regular/Supplementary/Improvement)
CC19P CHE2 C08 - ELECTROCHEMISTRY, SOLID STATE CHEMISTRY, AND STATISTICAL THERMODYNAMICS
(Chemistry)
(2019 Admission onwards)

Time : 3 Hours   Maximum : 30 Weightage

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

1. Conductance cell is prepared with electrodes of platinum coated with platinum black.why?

2. Explain concentration overpotential.

3. Write Ilkovich equation. Explain the terms.

4. Write Hermann-Maugin notation for C2h point froup

5. Explain Bragg's Equation

6. What are ferroelectric materials

7. What is Sterling's approximation? What is its importance in statistical thermodynamics?

8. Comment on the electronic partiton function of NO.

9. What are the drawbacks of Debye's theory of heat capacity of solids?

10. List the basic differences between classical statistics and quantum statistics in considering individual particles.

(8 × 1 = 8 Weightage)

Section B
Answer any *four* questions. Each question carries 3 weightage.

11. Differentiate Debye-Falkenhagen effect and the Wein effect.

12. Derive Butler volmer equation for cathodic current.

13. What are Bravais Lattices? Write a short note on the Bravais lattices of the seven crystal systems.

14. Explain Band theory of solids.

15. Derive Maxwell-Boltzmann distribution law.

16. Give an account of electron gas model for metals.

(4 × 3 = 12 Weightage)

Section C

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

17. Starting from basic principles derive Debye Huckel limiting law

18. Define overvoltage. Explain the terms (I) hydrogen overvoltage (II) Oxygen overvoltage

19. Write a brief account of the magnetic properties of solids

20. Derive the expession for vibrational partition function. How is it used to get the vibrational contributions to internal energy and Cv.

(2 × 5 = 10 Weightage)

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