QP CODE: 21101097

Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) EXAMINATION, APRIL 2021

Sixth Semester

CORE COURSE - CH6CRT12 - PHYSICAL CHEMISTRY - IV

Common for B.Sc Chemistry Model I, B.Sc Chemistry Model II Industrial Chemistry & B.Sc Chemistry Model III Petrochemicals

2017 Admission Onwards

DB99B906

Time: 3 Hours Max. Marks : 60

Part A

*Answer any **ten** questions.*

*Each question carries **1** mark.*

1. What is chemical potential?
2. Define van't Hoff factor.
3. Transference number of Cl^- in AgCl is found to be 0.2914. Calculate transference number of Ag^+.
4. Why asymmetry effect is also called relaxation effect.
5. Give two examples for galvanic cell.
6. What is meant by single electrode potential.
7. Write Gibbs-Helmoltz equation for cell reactions.
8. Give two examples for electrode concentration cells.
9. What is meant by over voltage?
10. What is meant by chain reaction in photochemistry?
11. What do you mean by plane of symmetry?
12. Define the schoenflies symbol sv.

(10×1=10)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Explain the terms critical solution temperature, upper critical solution temperature, lower critical solution temperature and conjugate solutions.

14. State Henry's law and mention some important applications.

15. The molar conductivities at infinite dilution of NH_4Cl, NaOH and NaCl are 95.6, 379.4 and 130.1 S cm^2 mol^{-1} respectively at 298 K. Electrolytic conductivity of 0.01 M solution of NH_4OH at 298 K is 9.33×10^{-5} $ohm^{-1}cm^{-1}$. Calculate degree of dissociation of NH_4OH.

16. Explain the factors affecting ionic conductivity.

17. What is a calomel electrode? Sketch the calomel electrode and give the electrode reactions.

18. Give a brief description of quinhydrone electrode. Explain pH determination using quinhydrone electrode.

19. State and explain various laws of photochemistry.

20. Draw Jablonsky diagrm and explain fluorescence and phosphorescence.

21. Write the group multiplication table of C_{2V} point group.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **10** marks.*

22. Draw and explain vapour pressure - composition and temperature – composition curves for ideal and non-ideal binary liquid solutions.

23. Write a note on different types of conductometric titrations.

24. What is meant by corrosion? Briefly describe the methods for monitoring and prevention of corrosion.

25. Define the term point group. Identify the point group to which H_2O , BF_3 and NH_3 belong and explain why.

(2×10=20)