(Pages : 3) **N – 1336**

Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, April 2022

First Degree Programme under CBCSS

Chemistry

CH-1643 : PHYSICAL CHEMISTRY III

(2017 Admission)

Time : 3 Hours Max. Marks : 80

PART – A

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

1. What is degree of hydrolysis of a salt?
2. What is chemiluminescence? Give one example.
3. What is meant by photosensitization?
4. What are non-ideal mixtures?
5. What is single electrode potential?
6. Define transport number of an ion.
7. Write down the rate equation for second order reaction.
8. What is meant by rate law of a chemical reaction?
9. What is a dry cell?
10. What is the ionic product of water?

(10 × 1 = 10 Marks)

P.T.O.

PART – B

Answer **any eight** questions. Each question carries **2** marks. (Short answer)

11. How molar conductance related to specific conductance?

12. Define ionic mobility.

13. What is over voltage?

14. Write down the Nernst equation for copper electrode in $CuSO_4$ solution.

15. Explain the very high quantum yield of certain photochemical reactions.

16. Define ionic product and solubility product of a salt.

17. *Explain why the addition of non-volatile solute increases the boiling point of a liquid.*

18. Explain Debye-Falkenhagen effect.

19. Define critical solution temperature.

20. Explain collision theory.

21. Write down the Arrhenius equation and explain the terms.

22. Differentiate between activity and activity coefficient of an electrolyte.

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions. Each question carries **4** marks. (Short essay)

23. Discuss the phase diagram of water system.

24. Differentiate between fluorescence and phosphorescence using suitable example.

25. Write down the Debye-Huckel-Onsager equation and explain the terms. What is it used for?

26. What are fuel cells? Discuss Hydrocarbon-O_2 fuel cell and its cell reaction.

27. Discuss the photochemical reaction of H_2 and Cl_2.

28. Discuss the phase diagram of Pb-Ag system and its applications.

29. Briefly explain (a) opposing reactions (b) zero order reactions.

30. Give the construction and working of saturated calomel electrode.

31. How distribution law is used to study association and dissociation molecules?

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions. Each question carries **15** marks. (Long essay)

32. (a) What are different laws of photochemistry, Explain. **6**

    (b) Discuss the different theories of catalysis. **9**

33. Explain the electrochemistry of corrosion. What are the different methods for preventing corrosion?

34. Explain the different types of conductometric titrations. **15**

35. What is Le-Chatelier's principle? Explain its application in Haber process and dissociation of PCl_5.

(2 × 15 = 30 Marks)
