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Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Chemistry

Core Course XII

CH 1643 – PHYSICAL CHEMISTRY III

(2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Unit of first order reaction is . . . . . .
2. What is complex reaction?
3. State Le-Chatelier's Principle.
4. Explain common ion effect.
5. Calculate the pH of 10^{-3}M HCl.
6. State distribution law.
7. Explain quantum yield.
8. Give one example for reversible electrode.

9. Give the electrode reactions of galvanic cell.

10. What is transport number?

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each question carries **2** marks.

11. Explain differential rate equation method.

12. Explain intermediate compound formation theory.

13. Explain the hydrolysis of salt of strong acid-weak base with equation.

14. Explain condensed phase rule equation.

15. Explain efflorescence.

16. Explain Beer-Lamberts law.

17. Give one example for photosensitization reaction.

18. What is Calomel electrode?

19. Give Nerst equation for galvanic cell for which overall cell reaction is

$aA + bB \rightarrow cC + dD$

20. Explain Wein effect.

21. State and explain Raoults law.

22. What is Chemiluminescence?

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each question carries **4** marks.

23. Derive integrated rate expression for first order equation.

24. Explain Lindeman theory of unimolecular reaction.

25. Explain levelling effect of solvent with example.

26. Explain congruent melting point with the help of phase diagram.

27. Explain CST. Give example for system with upper, lower and upper cum lower CST.

28. Describe Phosphorescence.

29. Explain liquid junction potential.

30. A copper rod is placed in 5×10^{-5} M $CuSO_4$ solution at 298 K. Calculate the potential of the electrode at 298K. Given $E^0Cu^{2+}/Cu = +0.34V$.

31. Explain the variation of conductance with dilution and limiting molar conductance.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each question carries **15** marks.

32. (a) Explain different methods for finding order of reaction. **10**

    (b) Explain Arrhenius equation and its significance. **5**

33. (a) Explain Hydrogen-Oxygen fuel cell. **5**

    (b) What is corrosion and what are the methods for preventing corrosion? **10**

34. (a) What are the applications of conductivity measurements? **10**

(b) Explain activity and activity coefficient. **5**

35. Derive Phase rule and its application to water system. **7+8**

(2 × 15 = 30 Marks)
