K20U 0092

Reg. No. : ....

Name : ....

VI Semester B.Sc. Degree (CBCSS – Reg./Supple./Improv.)
Examination, April 2020
(2014 Admission Onwards)
CORE COURSE IN CHEMISTRY
6B15 CHE : Physical Chemistry – III

Time : 3 Hours　　　　　　　　　　　　　　　　　　　Max. Marks : 40

SECTION – A

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

1. Define single electrode potential.

2. What are pseudo first order reactions ?

3. Name a redox indicator.

4. What is meant by phosphorescence ?　　　　　　　　　　　　　　**(1×4=4)**

SECTION – B

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

5. State Growtus Draper law. What is its significance ?

6. Explain the term quantum yield.

7. What are parallel and consecutive reactions ? Give examples.

8. Differentiate between threshold energy and activation energy.

9. Explain the term activity and activity coefficient.

10. What is meant by electrochemical series ? Give two uses.

11. Give two limitations of Lowry-Bronsted concept.

P.T.O.

12. Why is KCl used in salt bridge ?

13. Give the Nernst equation and explain the terms.

14. Explain why an aqueous solution of $FeCl_3$ is acidic. (7×2=14)

SECTION – C

Answer **any 4** questions. **Each** question carries **3** marks.

15. Describe the construction and reactions of calomal electrode.

16. What are Lasers ? How are they useful ?

17. Derive an expression for the hydrolysis constant of a salt of weak acid and strong base.

18. Explain the transition state theory.

19. The EMF of the cell Ag/AgCl (satd) // KNO_3(satd) // 0.005M $AgNO_3$/Ag is found to be 0.1585v at 298 K. Calculate the solubility of AgCl and its solubility product.

20. Give any three application of Kohlrauschs law. (3×4=12)

SECTION – D

Answer **any 2** questions. **Each** question carries **5** marks.

21. a) What is meant by buffer solution ? 1

    b) Derive Hendersons equation and mention its important applications. 4

22. Discuss the applications of EMF measurements.

23. a) Give an account of temperature dependence of reaction rates.

    b) Explain Hinshelwood mechanism.

24. a) Outline the determination of solubility of by conductance measurement.

    b) The solubility product of calcium oxalate in water at 298K is $2×10^{-9}$ mol L^{-1}. Calculate the solubility. (5×2=10)

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