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VI Semester B.Sc. Degree (CBCSS – OBE – Regular) Examination, April 2022
(2019 Admission)
CORE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
6B15CHE/PCH : Physical Chemistry – III

Time : 3 Hours   Max. Marks : 40

Instruction : *Answer the questions in English only.*

SECTION – A

(Very short answer type. **Each** carries 1 mark. Answer **all 4** questions.)

1. Define equivalent conductance.

2. Define Wien effect.

3. The pH of a solution is 5. Calculate its hydrogen ion concentration.

4. Give an example for photochemical reaction.   (4×1=4)

SECTION – B

(Short answer type. **Each** carries 2 marks. Answer 7 questions out of 10.)

5. Define ionic strength.

6. State Faraday's first law of electrolysis.

7. What is Debye Falkenhagen effect ?

8. Write and explain the terms of Henderson's equation for an acidic buffer.

9. What is liquid junction potential ?

10. The standard reduction potential of Zn and Ag are −0.76 and 0.80 respectively. Calculate the standard EMF of the cell Zn | Zn^{2+} ||Ag^+| Ag.

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11. The half life time of a first order reaction is 470 s. Calculate the rate constant of the reaction.

12. What is meant by zero order reaction ? Give one example.

13. Distinguish between order and molecularity.

14. Define molar absorption coefficient.   (7×2=14)

SECTION – C

(Short essay/problem type. **Each** carries 3 marks. Answer 4 questions out of 6.)

15. State and explain Kohlrausch's law.

16. Explain the method of determination of solubility by conductance measurement.

17. Discuss the construction of standard hydrogen electrode.

18. Derive an expression for the EMF of the concentration cell without transference.

19. Derive an expression for a second order reaction.

20. Differentiate between fluorescence and phosphorescence.   (4×3=12)

SECTION – D

(Long essay type. **Each** carries 5 marks. Answer 2 questions out of 4.

21. Define degree of hydrolysis. Derive the relation between hydrolysis constant and degree of hydrolysis of salt of a strong acid and weak base.

22. Explain the principle and applications of potentiometric titration.

23. Write a note on polarography.

24. Discuss the Lindemann theory of unimolecular reactions.   (2×5=10)

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