E 1930 (Pages : 2) Reg. No.....

Name.....

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, APRIL 2021

Sixth Semester

Core Course—SOLUTION CHEMISTRY

(Common for B.Sc. Chemistry Model I and Model II, B.Sc. Petrochemicals, B.Sc. Chemistry Environment and Water Management)

[2013 – 2016 Admissions]

Time : Three Hours Maximum Marks : 60

Part A

Answer **all** *questions.*

Each question carries 1 *mark.*

1. Explain the term specific conductance.
2. State Walden's rule.
3. Explain standard electrode potential.
4. Give the cell representation for the determination of pH using glass electrode.
5. Give one limitation of quin hydrone electrode.
6. Define Vant' Hoff factor.
7. Give an example of Soft acid.
8. What is meant by a colligative property?

(8 × 1 = 8)

Part B

Answer any **six** *questions.*

Each question carries 2 *marks.*

9. State and explain Kohlrausch's law.
10. Explain the term activity and activity co-efficient of electrolytes.
11. Write the half-cell reactions and overall reactions of following cell :

    Pt ; Hg, Hg_2Cl_2, Cl^-/H^+ H_2 (g) ; Pt.

12. Construct a galvanic cell for the following reaction. Also get the Nernst equation.

    $Zn (s) + H_2SO_4 (aq) \rightarrow Zn SO_4 (aq) + H_2 (g)$.

13. Explain Hydrogen-Oxygen fuel cell.

Turn over

14. Discuss Debye-Huckel theory.
15. Give the Henderson's equation.
16. Calculate the hydrogen ion concentration in moles per litre of a solution having pH 5.1.
17. Explain the deviations from Raoult's law.
18. Explain one application of solution product principle.

(6 × 2 = 12)

Part C

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

19. Explain the determination of transport number by Hitorff 's method.
20. What are concentration cells? Explain different types of concentration cells with examples.
21. Give the different types of reversible electrodes with example.
22. Explain the condition under which abnormal molar mass may be obtained for the measurement of collegative property.
23. Write a note on partially misceble liquid-liquid system.

(4 × 4 = 16)

Part D

Answer any **two** *questions.*
Each question carries 12 *marks.*

24. Discuss briefly some application of conductance measurements.
25. Define molal depression constant. Derive thermodynamically the expression for depression in freezing point.
26. Discuss the application of E.m.f. measurements.
27. Explain in detail the applications of Pearson's HSAB concept.

(2 × 12 = 24)