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22CHU517

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Fifth Semester)

Branch – **CHEMISTRY**

PHYSICAL CHEMISTRY - I

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Which of the following statements is correct with respect to electrolytic solutions?

(a) Its conductance increases with dilution

(b) Its conductance decreases with dilution

(c) Its conductivity increases with dilution

(d) Its equivalent conductance decreases with dilution

2 Ostwald's dilution law is applicable to-----

(a) Strong electrolytes only (b) Weak electrolytes only

(c) Non-electrolytes (d) Strong as well as weak electrolytes

3 Buffer solution is destroyed when _____

(a) Addition of weak base (b) Addition of strong acid or base

(c) Addition of weak acid (d) Addition of a salt

4 Which of the following is the correct statement regarding electrochemical cell?

(a) It converts chemical energy to electrical energy

(b) It converts electric energy to chemical energy

(c) It converts chemical energy to thermal energy

(d) It does not maintain the flow of charge in a circuit

5 Corrosion involves _____ reactions.

(a) Oxidation (b) Reduction

(c) Displacement (d) Both oxidation and reduction

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6. a Explain the mechanism of electrolysis.

OR

b State the Ohm's law.

7 a. State the Wein effect.

OR

b. Describe the Debye-Falkenhagen effect.

8 a. Write the ionic product of water.

OR

b. Explain the leveling effect.

Cont...

9. a. Describe the standard electrode potential.

OR

b. Explain the standard hydrogen electrode.

10 a. Describe the chrome plating.

OR

b. Narrate the Pre-plating steps.

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11. a. Elucidate the conductance. Classify it.

OR

b. Highlight the term transport number. Enumerate the determination of transport number by using moving boundary method.

12 a. Discuss the asymmetric effect and electrophoretic effect.

OR

b. Discuss the Conductometric titrations.

13 a. Discuss the relationship between pH and buffer.

OR

b. Elucidate the relationship between the degree of dissociation and dissociation constant in weak electrolytes.

14 a. Elucidate the relationship between Gibbs Energy Change and EMF of a Cell.

OR

b. Discuss the determination of solubility product of sparingly soluble salt.

15 a. Discuss the Electro deposition method.

OR

b. Discuss the role of copper coating before Ni and Cr plating.

Z-Z-Z END