

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATIONS DECEMBER 2024
(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 one of the following scientists stated that the equivalent conductivity of an electrolyte at infinite dilution is equal to the sum of the conductance of the ions and cations?
(a) Arrhenius (b) Kohlrausch
(c) Kolbe (d) Lavoisier
- 2 Which one of the following conditions is true when the electrolytic solutions are infinitely dilute?
(a) Electrolyte is 100% dissociated
(b) Molecules continue to exist in solution
(c) Interionic effects increase
(d) Conductance is infinite at infinite dilution
- 3 Amphoteric nature of water is explained by
(a) Bronsted – Lowry theory (b) Arrhenius theory
(c) Lewis theory (d) Ostwald theory
- 4 The device used for measuring emf is
(a) Voltmeter (b) Potentiometer
(c) Multimeter (d) Galvanometer
- 5 Which one of the following metals cannot be electro plated?
(a) Copper (b) Nickel
(c) Silver (d) Tungsten

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

6. a Explain the Faraday's law of electrolysis.
OR
b State Kohlrausch law of electrolysis. How is it useful to determine the molar conductivity of weak electrolyte at infinite dilution?
- 7 a. Bring out the factors influencing degree of dissociation.
OR
b. Describe Ostwald dilution law.
- 8 a. Briefly describe common ion effect.
OR
b. Explain the Lowry and Bronsted theory of Acids and bases.
9. a. Narrate the liquid junction potential.
OR
b. Compare the Galvanic and Electrolytic cells.

Cont...

- 10 a. Define corrosion. How is it controlled?
OR
b. Narrate the principles of electroplating.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. a. Define conductance. How is it Classified?
OR
b. Highlight the term transport number. Enumerate the determination of transport number by using Hittorf method.
- 12 a. Discuss the Arrhenius theory of electrolytic dissociation.
OR
b. Derive the Debye-Huckel theory of strong electrolytes.
- 13 a. How are weak acids dissociated? How is dissociation constant derived?
OR
b. Elucidate the relationship between pH and buffer.
- 14 a. What is electrochemical series and discuss its applications with an example.
OR
b. Summarize the following;
(i) Polarization (ii) Over potential (iii) Hydrogen Over Voltage
- 15 a. Discuss about Electroforming and electroless plating.
OR
b. Discuss the different types of coating. Write one example for each.

Z-Z-Z

END