St. Mary's Convent School Gulaothi, U.P. (2026 – 27)

Set - B

Test PAPER

Class 12

chemistry

T.sign_____

Time: 45 min.

Max Marks:20

NAME:- L A K S H Y A

Write name in capital letter

ROLL NO:- 0 9

General instructions

1.All question are compulsory.

2.Write neately and clearly in given space.

3.Do not cut or fill the circle given on upper and bottom of paper.

4.Write the answer of each question in the space provided

Write the option in capital letters only)

Section A : Write down the correct option for the given questions.

ANS 1: b ✓ 0.5/0.5

ANS 2: c ✗ 0.0 /0.5

ANS 3: c ✗ 0.0/0.5

ANS 4: a ✓ 0.5/0.5

Section B Very Short Answer (2 × 1 = 2 marks)

ANS 5: 1.0 ✓

Molality is defined as the no. of moles of solute by mass of solvent in kg is known as Molality

$$m = \frac{\text{no. of moles of Solute}}{\text{mass of solvent in kg}}$$

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ANS 6:

Missing reference to standard hydrogen electrode and incorrect temperature value.

2.0

Standard electrode potential is the difference b/w the electrode and its ion present in the electrolyte under the equilibrium condition, with condition pressure 1 atm, temperature 25°C and Concentration is 1M is known as Standard Electrode Potential.

ANS 7:

✓

At a constant temp, The Solubility of a Gas is directly proportional to the vapour pressure of a gas present above the surface of a liquid.

Partial Bressure ← $P_x = K_H X$ → Mole fraction

→ Henry Constant

Marks	0.5
Teacher's feedback	

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ANS 8:

$$m = \frac{\text{no. of moles of Solute}}{\text{mass of Solvent M(kg)}}$$

$$\text{No. of moles of NaOH} = \frac{10}{40}$$

$$m = \frac{\frac{1}{4}}{\frac{200}{1000}} = \frac{1}{4} \times \frac{5}{1} = \frac{5}{4}$$

$$m = 1.25\,m$$

Marks	2.0
Teacher's feedback	Correct method and final answer. Good use of molality formula and unit conversion.

ANS 9:

$E = E^\circ - \frac{2.303\,RT}{nF} \log_{10} \frac{[P]}{[R]}$

- E° → Standard electrode potential
- T → temperature
- $[P]$ → Conc. of product
- $[R]$ → Conc. of Reactant
- R → Gas Constant

when

temp = 25°C or 298 K

R = 8.317

F = 96500

So,

$$E = E^\circ - \frac{0.051}{n} \log_{10} \frac{[P]}{[R]}$$

Marks	1.0
Teacher's feedback	General Nernst equation correct. However, the 25°C coefficient should be 0.0591/n, not 0.051/n. Also, you did not explain the terms (E, E°, n, F, R, T, and reaction quotient Q/activities).

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Definitions unclear; swapped terms; lacks proper definitions and key distinctions.

ANS 10:

Electrolytic Conductivity	Molar Conductivity
• Conductivity due to Chemical decomposition	• Conductivity per unit Concentration is known as Molar Conductivity
• on inc Temp ↑ Electrolytic Conductivity Inc ↑	• $\frac{K}{C}$ on inc Temp ↑ Molar Conductivity dec ↓

Marks	1.0
Teacher's feedback	

ANS 11:

(1) → x_B · $x_{solute} = \frac{p^\circ - p}{p^\circ}$ → Vapour pressure of Solvent

→ Pure vapour pressure of Solvent

$x_{solute} = \frac{\text{no of moles of solute}}{\text{no. of moles of solute} + \text{no. of moles of solvent}}$

$x_{solute} = \frac{\text{Given mass of Solute}}{\text{molar mass of Solute}} \times \frac{1}{n_{solute} + n_{solvent}}$ — (2)

Put (2) in (1)

$\frac{\text{Given mass of Solute}}{\text{molar mass of Solute}(n_{solute} + n_{solvent})} = \frac{p^\circ - p}{p^\circ} = x_{Solute}$

Marks	1.0
Teacher's feedback	You correctly related relative lowering to mole fraction, but the first equation is wrong and the derivation to molar mass is incomplete. You must introduce solvent moles/mass and derive $(p^\circ - p)/p^\circ \approx w_B M_A/(w_A M_B)$ or M_B expression.

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ANS 12:

~~W = - E W electrical~~

Work done = ~~o~~ Work done on the system

$W = -W_{electrical}$

$W = q\Delta V$ ——— (1)

↳ Electrode potential = E°_{cell}

↳

$q = ne$

$= n \times 1.6 \times 10^{-19}$

n m 1 mole

$= 1.6 \times 10^{-19} \times n \times 6.023 \times 10^{23}$

$= n\ 96500$

$= nF$ $\because 1F \approx 96500$

Put in (1)

$W = -nF E^\circ_{cell}$

work done

Energy stored in ~~&~~ form of Energy

Gibbs free energy $= -nF E^\circ_{cell}$

$\boxed{\Delta G = -nF E^\circ_{cell}}$

Marks	2.0
Teacher's feedback	Correctly arrives at ΔG = −nFE°, with q = nF. However, initial equation W = −W_electrical contradicts W = qΔV, and "electrode potential = E°cell" is incorrect terminology; distinguish half-cell potential from cell potential and use E (or E°) consistently.

ANS 13:

$$m = \frac{\text{no. of mole of solute}}{\text{mass of Solvent in (kg)}}$$

~~AA~~=

$$\text{no. of moles of Solute} = \frac{8}{40} \quad \frac{1}{8}$$

$$m = \frac{\frac{1}{8}}{\frac{250}{1000}} = \frac{1}{8} \times \frac{4}{2} \quad 1$$

$$m = 0.5\ m$$

(ii)

Galvanic	electrolytic cell
• It change chemical Energy to Electric Energy	• It change Electric energy to chemical Energy
• Ex → Daniel cell	• ~~&~~ ex → ~~elect~~ dry Cell

Marks	2.0
Teacher's feedback	Molality result is correct, but you wrote 8/40 = 1/8; it should be 5/40 = 1/8. Part (ii) not attempted—add two differences between galvanic and electrolytic cells next time.

13.5/20.0

Usha Rani 11:03, 20.08.2026

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