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:- P A L A K

Write name in capital letter

ROLL NO:- 1 2

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: A ✓ 0.5 /0.5

ANS 3: B ✓ 0.5/0.5

ANS 4: A ✓ 0.5/0.5

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

Confuses solvent and solution; molality should use 1 kg solvent

ANS 5: 0.5

Molality is defined as the number of moles of solute particles dissolved in 1 Kg ~~titre~~ or 1000 g of the ~~solution~~. solvent.

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ANS 6:

Definition incorrect; temperature wrong (should be 298 K) and reference.

1.0

The standard electrode potential is defined as the difference in potential ~~of two~~ between two electrodes present in the given electrolyte.

It is represented by (E°).

It takes place on the condition of :-

- The temperature should be 298 K.
- The concentration of the ionic solution should be 1 mol L^{-1}.
- And the pressure of the gas should be 1 atm.

Incorrect formula; missing 'in a liquid' and 'partial pressure' term.

ANS 7:

At the constant temperature the solubility of the given gas is directly proportional to the pressure of the gas.

$$x_{gas} \propto P_{gas}$$

$$x_{gas} = K_H \cdot P_{gas}$$

Marks	0.5
Teacher's feedback	

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ANS 8:

mass of solute = 10g.
mass of solvent = 200g

molality = $\frac{\text{no. of mols of solute}}{\text{mass of solvent in kg}}$

- $n = \frac{10}{40} = \frac{1}{4} = 0.25$

$m = \frac{0.25}{200 \times 10^{-3}} \Rightarrow \frac{0.25 \times 10^3}{200} = 1.25\,m$

Marks	2.0
Teacher's feedback	Correct solution and final answer (1.25 m). No mistakes.

ANS 9:

- nernst equation of a cell -

$$E^\circ = E^\circ_{cell} - \frac{0.059}{n} \log_{10} \frac{[P]^a}{[R]^b}$$

- E°_{cell} = standard Reduction Potential.
- n = no. of electrons involved.
- $[P]$ = concentration of product
- $[R]$ = concentration of reactant.
- a = coefficient of product if any.
- b = stochiometry coefficient of reactant if any.

Marks	1.0
Teacher's feedback	Equation uses E° on LHS; it should be E. E°cell is the standard cell potential (emf), not a reduction potential. Otherwise terms are fine; 0.059 factor assumes 25°C.

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Electrolytic conduction involves ions, not electrons; molar definition incomplete, vague

ANS 10:

• Electrolytic conductivity is defined as the case of flow of electrons with which the current flow through the electrolytic conductance.

• Molar conductivity is defined as the conductance of a conductor or solution through concentration of 1 mole.
It is represented by [^m].

Marks	0.0
Teacher's feedback	

ANS 11:

Relative lowring of vapour prissure is $\Rightarrow \frac{p^\circ - p}{p^\circ} = x \cdot i$

• i is due to van't Hoff factor if given:

$\Rightarrow x \cdot i \cdot m' = \frac{p^\circ - p}{p^\circ}$

• $i \rightarrow$ vant' hoff factor
• $m' \rightarrow$ molar mass , • $p \rightarrow$ vapour prissure
• $p^\circ \rightarrow$ vapour prissure of pure solvent.

Marks	1.0
Teacher's feedback	Relative lowering equals mole fraction of solute, not x·i, and it's unrelated to molality here. You needed to express (p°-p)/p° = (w2/M2)/((w1/M1)+(w2/M2)) ≈ (w2/M2)/(w1/M1) and hence M2 relation.

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ANS 12:

• Gibbs free energy is difined as the free energy applied externally to the reaction.

• $\Delta G_i^\circ = -nFE$

• Gibbs free energy can also be walculated by its change :-

• $\Delta G_i^\circ = -2.303\,RT \log_{10} K_c$

where, • R = Gass constant
• T = temperature in kelvin
• K_c = equilibrium constant.

• If the Gibbs free energy is nigative the reaction is spontanious.
• If the Gibbs free energy is positive the reaction is non- spontanious.

• If the Gibbs free energy is zero, the reaction is said to be in equilibrium.

Marks	2.0
Teacher's feedback	Equations are relevant but incomplete. The first should use E° (standard potential). You did not derive E or the Nernst equation (E = E° − (RT/nF) ln Q) or explicitly show E° = (RT/nF) ln K.

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ANS 13:

mass of solute = 5g
mass of solvent = 250g

(i). molality = $\frac{\text{no. of moles of solute}}{\text{volume of solvent (kg)}}$

$n = \frac{5}{40} = \frac{1}{8}$

$m = \frac{1 \times 10^3}{8 \times 250} \Rightarrow \frac{1000}{2000} = 0.5\ m$

(ii).

Galvanic cell	Electrolytic cell
• Galvanic cell converts the chemical energy into electrical energy.	• Electrolytic cell converts the electrical energy into chemical energy.
• Galvanic cell contains a salt bridge for the transfer of ions and maintains the electrical neutrality of the solution.	• Electrolytic cell does not contain any type of salt bridges.

Marks	1.0
Teacher's feedback	Molality value is correct, but you defined it using volume; it should be mass of solvent in kg. Also, you omitted part (ii): provide two differences between galvanic and electrolytic cells.

11.0/20.0

Usha Rani 10:51, 20.08.2026

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