BK BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL

PERIODIC-TEST-1 2025-26

CHEMISTRY (043) Answer Key

Class   : XII

Date   : 30/06/2025

Admission No.:

Duration: 1 Hr

Max. Marks: 25

Roll No.:

General Instructions:

(1) There are 13 questions in all. All questions are compulsory.

(2) This question paper has three sections: Section A, Section B and Section C.

(3) All the sections are compulsory.

(4) Section A contains five questions of 1 mark each, Section B contains four questions of two marks each, Section C contains four questions of three marks each.

(5) There is no overall choice. Use of calculators is not allowed.

SECTION-A

1. (b) twice .

2. (a) 50 M

3. (b) 130 gram

4. (a) 38%

5. (b) mol lit^{-1} sec^{-1}

SECTION - B

6. (i) It is the sum of powers of molar concentrations of reacting species in the rate equation of the reaction.   2

   (ii) the number of particles participated in a chemical reaction is known is molecularity.

7. (a) 3F   (b) 2F   2

8. $Ag^+/Ag = 0.80$ V, $Cu^{2+}/Cu = 0.34$ V, $Fe^{2+}/Fe = -0.44$ V. $Cr^{3+}/Cr = -0.74$ V, $Mg^{2+}/Mg = -2.37$ V

    $K^+/K = -2.93$ V,   2

9. Molarity : It is the number of moles of solute dissolved in 1 litre of solution. It is temperature dependent.

                ω×1000 mol.mass ×V

   Molality : It is the number of moles of solute dissolved in 1 kg of the solvent.

         For very dilute solution, the factor $MM_2/1000$ can be neglected in comparison to 1.

         Hence molality will be same to molarity when density d = 1.

Molality is independent of temperature, whereas molarity is a function of temperature because volume depends on temperature and mass does not.

. No effect of temperature on molality   2

SECTION C

10. Non-ideal solutions exhibit either positive or negative deviations from Raoult's law. What are these deviations and why are they caused? Explain with one example for each type. (Delhi 2010)

Answer:

Non-ideal solutions exhibit Negative deviation from Raoult's law : For any composition of the non-ideal solution, the partial vapour pressure of each component and total vapour pressure of the solution is less than expected from Raoult's law. Such solutions show negative deviation.

Example : Mixture of $CHCl_3$ and acetone.
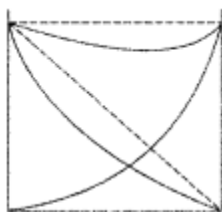
$x_1 = 0$ Mole fraction $x_1 = 1$
$x_2 = 1$ $x_1 \rightarrow$ $x_2 = 0$
              $\leftarrow x_2$

Non-ideal solutions show positive deviations from Raoult's law on mixing of two volatile components of the solution.

Example : A Mixture of acetone and benzene solutions show positive deviation,   3

11. (a) For a reaction $A + B \rightarrow P$, the rate law is given by Rate $= k[A][B]^2$

   (i) 4 times   3

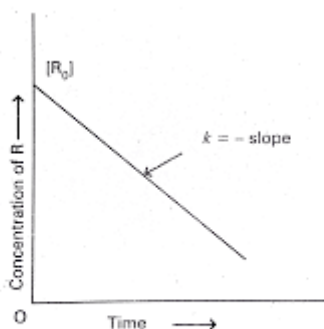$(b)\ t_{\frac{1}{2}} = \dfrac{0.693}{k}\ t_{\frac{1}{2}} = 30$ minutes $\ k = \dfrac{0.693}{30}$ min^{-1}

$k = 0.0231$ min^{-1}

$k = \dfrac{2.303}{t} \log \dfrac{[A_0]}{[A]}$

$t = \dfrac{2.303}{0.0231} \log \dfrac{100}{10}\ \ \ t = \dfrac{2.303}{0.0231}$ min

$\therefore\quad t = 99.7$ min

12. (a)

Variation in the concentration vs time plot
for a zero order reaction

3

(b) Explain Rate Law = $K [A]^x [B]^y$ and explanation

13. emf of the cell $Zn/Zn^{2+}(0.1M) \parallel Cd^{2+} (0.01M)/Cd$ at 298K

$$E^0 = E^0_{Zn^{2+}/Zn} = -0.76 \ - E^0_{Cd^{2+}/Cd} = -0.40 \ V = 1.10V$$

$$E_{Cell} = E^0_{cell} - 0.059/2 \log 0.1/0.01$$

$$Ecell = 1.10 - 0.03 = 1.07V \hspace{3cm} 3$$

-------------------------**ALL THE BEST**----------------------------