JEE–MAIN EXAMINATION – JANUARY 2026

(HELD ON WEDNESDAY 28th JANUARY 2026) **TIME : 3:00 PM TO 6 :00 PM**

CHEMISTRY | TEST PAPER WITH SOLUTION

SECTION-A

51. Identify the **correct** statements :

The presence of $-NO_2$ group in benzene ring

A. activates the ring towards electrophilic substitutions.

B. deactivates the ring towards electrophilic substitutions.

C. activates the ring towards nucleophilic substitutions.

D. deactivates the ring towards nucleophilic substitutions.

(1) B and D Only

(2) C and A Only

(3) A and D Only

(4) B and C Only

Ans. (4)

Sol. Presence of NO_2 group in Benzene ring

deactivate ring towards electrophilic substitution reaction due to –M effective & activate ring towards nucleophilic substitution.

Ans. → (4) B & C

52. Given below are two statements :

Statement I : The increasing order of boiling point of hydrogen halides is HCl < HBr < HI < HF.

Statement II : The increasing order of melting point of hydrogen halides is HCl < HBr < HF < HI.

In the light of the above statements, choose the ***correct*** answer from the options given below :

(1) Both Statement I and Statement II are true

(2) Statement I is true but Statement II is false

(3) Both Statement I and Statement II are false

(4) Statement I is false but Statement II is true

Ans. (1)

Sol. Correct order of

(i) Boiling point : HF > HI > HBr > HCl

(ii) Melting point : HI > HF > HBr > HCl

53. Consider the elements N, P, O, S, Cl and F. The number of valence electrons present in the elements with most and least metallic character from the above list is respectively.

(1) 7 and 5 (2) 5 and 6

(3) 5 and 7 (4) 6 and 7

Ans. (3)

Sol. Least metallic = F, valence electrons = 7

Most metallic = P, valence electrons = 5

54. Observe the following equilibrium in a 1 L flask.

$$A(g) \rightleftharpoons B(g)$$

At T(K), the equilibrium concentrations of A and B are 0.5 M and 0.375 M respectively. 0.1 moles of A is added into the flask and heated to T(K) to establish the equilibrium again. The new equilibrium concentrations (in M) of A and B are respectively.

(1) 0.367, 0.275 (2) 0.53, 0.4

(3) 0.742, 0.557 (4) 0.557, 0.418

Ans. (4)

Sol.

$$\underset{0.5M}{A} \rightleftharpoons \underset{0.375\ M}{B} \quad \text{(At equilibrium)}$$

$$K_{eq} = \frac{[B]_{eq}}{[A]_{eq}} = \frac{0.375}{0.5} = 0.75$$

Now 0.1 mole of A is added so reaction will move in forward direction.

$$\underset{0.6-x}{A} \rightleftharpoons \underset{0.375+x}{B}$$

$$K_{eq} = 0.75 = \frac{0.375 + x}{0.6 - x}$$

$0.45 - 0.75x = 0.375 + x$

$1.75x = 0.075$

$$X = \frac{0.075}{1.75} = \frac{3}{70} = 0.043$$

Moles of A = 0.043 = 0.557

Moles of B = 0.418

Ans. (4) is correct.

55. The plot of $\log_{10}K$ vs $\frac{1}{T}$ gives a straight line. The intercept and slope respectively are (where K is equilibrium constant).

(1) $\frac{2.303R}{\Delta H^\circ}, \frac{2.303R}{\Delta S^\circ}$ (2) $\frac{\Delta S^\circ}{2.303R}, -\frac{\Delta H^\circ}{2.303R}$

(3) $-\frac{\Delta S^\circ R}{2.303}, \frac{\Delta H^\circ R}{2.303}$ (4) $-\frac{\Delta H^\circ}{2.303R}, \frac{\Delta S^\circ}{2.303R}$

Ans. (2)

Sol. $\log_{10}K = -\frac{\Delta H^o}{2.303RT} + \frac{\Delta S^o}{2.303R}$

y-intercept $= \frac{\Delta S^o}{2.303R}$

Slope $= -\frac{\Delta H^o}{2.303R}$

Ans. (2) is correct.

56. The reactions which produce alcohol as the product area :

A. $CH_4 + O_2 \xrightarrow[\Delta]{Mo_2O_3}$

B. $2CH_3CH_3 + 3O_2 \xrightarrow[\Delta]{(CH_3COO)_2Mn}$

C. $(CH_3)_3CH \xrightarrow{KMnO_4}$

D. $2CH_4 + O_2 \xrightarrow{Cu/523K/100\,atm.}$

E. $CH_3–CH=CH–CH_3 \xrightarrow{KMnO_4/H^+}$

Choose the **correct** answer from the options given below :

(1) A and D Only (2) A, C and E Only

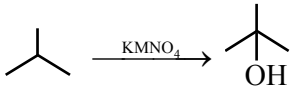
(3) C and D Only (4) B, D and E Only

Ans. (3)

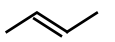
Sol. Reaction given Alcohol

(A) $CH_4 + O_2 \xrightarrow[\Delta]{Mo_2O_3} HCHO$

(B) $2CH_3CH_3 + 3O_2 \xrightarrow[\Delta]{(CH_3COO)_2Mn} CH_3COOH$

(C)  $\xrightarrow{KMNO_4}$

(D) $2CH_4 + O_2 \xrightarrow[523K,\,100\,atm.]{Cu} CH_3–OH$

(E)  $\xrightarrow{KMNO_4/H^+} CH_3COOH$

And. → (3) C, D

57. Consider the following statements about manganate and permanganate ions. Identify the **correct** statements :

A. The geometry of both manganate and permanganate ions is tetrahedral.

B. The oxidation states of Mn in manganate and permanganate are +7 and +6, respectively.

C. Oxidation of Mn(II) salt by peroxodisulphate gives manganate ion as the final product.

D. Manganate ion is paramagnetic and permanganate ions is diamagnetic.

E. Acidified permanganate ion reduces oxalate, nitrite and iodide ions.

Choose the **correct** answer from the options given below:

(1) A, C and D Only (2) A, B and C Only

(3) A, D and E Only (4) A and D Only

Ans. (4)

Sol. Manganate ion → MnO_4^{-2}

Permanganate ion → MnO_4^-

(A) Both are tetrahedral (d^3s Hybridisation)

(B) MnO_4^- (+7 oxidation state)

MnO_4^{-2} (+6 oxidation state)

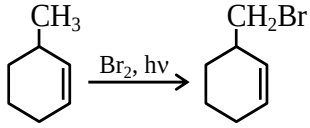
(C) $Mn^{2+} + S_2O_8^{2-} \rightarrow MnO_4^-$ (Permanganate ion)

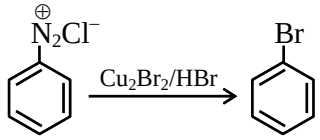
(D) $MnO_4^- \rightarrow$ Diamagnetic

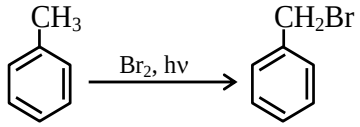
$MnO_4^{-2} \rightarrow$ Paramagnetic

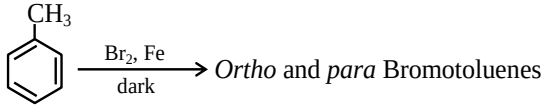
(E) It is oxidising agent

58. Which of the following reaction is NOT correctly represented ?

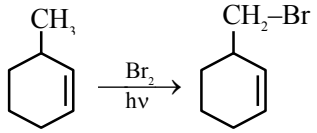
(1) 

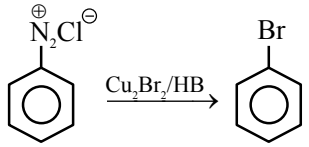
(2) 

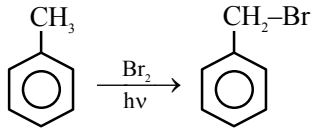
(3) 

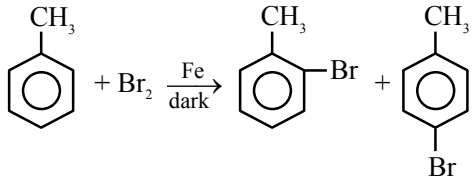
(4) 

Ans. (1)

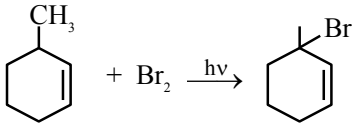
Sol. (1) 

(2) 

(3) 

(4) 

Major product of reaction (1) will be



As 3° radical more stable

Ans. (1)

59. The wavelength of photon 'A' is 400 nm. The frequency of photon 'B' is $10^{16} s^{-1}$. The wave number of photon 'C' is 10^4 cm^{-1}. The correct order of energy of these photons is :

(1) C > B > A (2) B > A > C

(3) A > B > C (4) A > C > B

Ans. (2)

Sol. (1) Wavelength of A = 400 nm.

(2) Wavelength of B (λ) = $\frac{C}{\nu} = \frac{3\times10^8}{10^{16}}$

$= 3 \times 10^{-8} = 30 \times 10^{-9} = 30$ nm.

(3) Wavelength of C(λ) = $\frac{1}{\bar{\nu}} = \frac{1}{10^4} = 10^{-4}$ cm

$= 10^{-6}$ m = 1000 nm

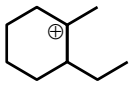
Here $\lambda_C > \lambda_A > \lambda_B$

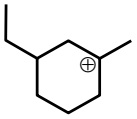
Energy(E) $\propto \frac{1}{\lambda}$

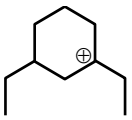
So $E_B > E_A > E_C$

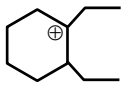
Ans. (2) is correct.

60. The cyclic cations having the same number of hyperconjugation are :

A. 

B. 

C. 

D. 

Choose the **correct** answer from the options given below :

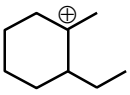
(1) A and C Only

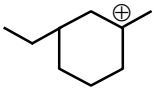
(2) B and C Only

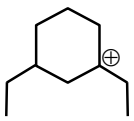
(3) A and B Only

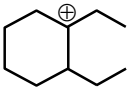
(4) A, C and D only

Ans. (1)

Sol. (A)  6αH

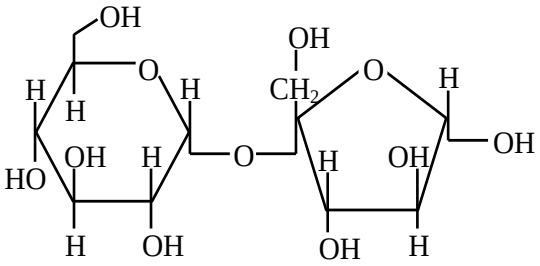
(B)  7αH

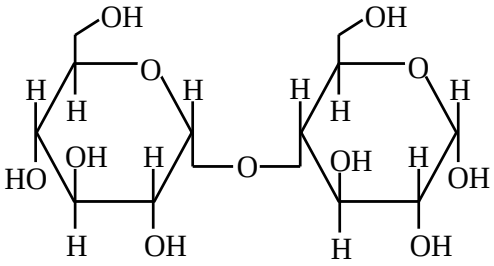
(C)  6αH

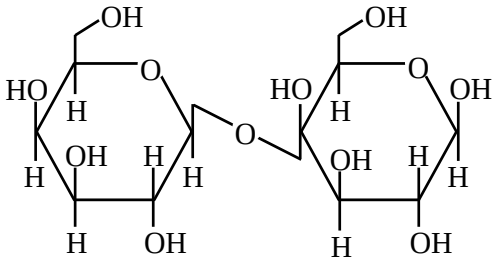
(D)  5αH

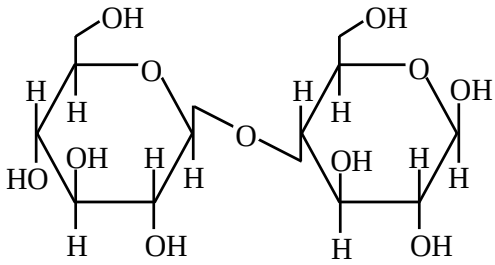
Ans. – (1) A & C

61. Structures of four disaccharides are given below. Among the given disaccharides, the non-reducing sugar is :

(1) 

(2) 

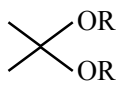
(3) 

(4) 

Ans. **(1)**

Sol. Structure (1) given is of sucrose which is non reducing.

For non reducing sugar compound should have acetal linkage not hemi acetal linkage.



62. Match List-I with List-II according to shape.

	List-I		List-II
A.	XeO_3	I.	BrF_5
B.	XeF_2	II.	NH_3
C.	XeO_2F_2	III.	$[I_3]^-$
D.	$XeOF_4$	IV.	SF_4

Choose the **correct** answer from the options given below :

(1) A-II, B-I, C-III, D-IV

(2) A-II, B-III, C-IV, D-I

(3) A-II, B-III, C-I, D-IV

(4) A-III, B-II, C-IV, D-I

Ans. **(2)**

Sol. XeF_2 & I_3^- : 2 bond pair 3 lone pair ; Linear

$XeOF_4$ & BrF_5 : 5 bond pair 1 lone pair ; Square pyramidal

XeO_2F_2 & SF_4 : 4 bond pair 1 lone pair ; See saw

XeO_3 & NH_3 : 3 bond pair 1 lone pair ; Pyramidal

63. A student performed analysis of aliphatic organic compound 'X' which on analysis gave C = 61.01%, H=15.25%, N=23.74%.

This compound, on treatment with HNO_2/H_2O produced another compound 'Y' which did not contain any nitrogen atom. However, the compound 'Y' upon controlled oxidation produced another compound 'Z' that responded to iodoform test.

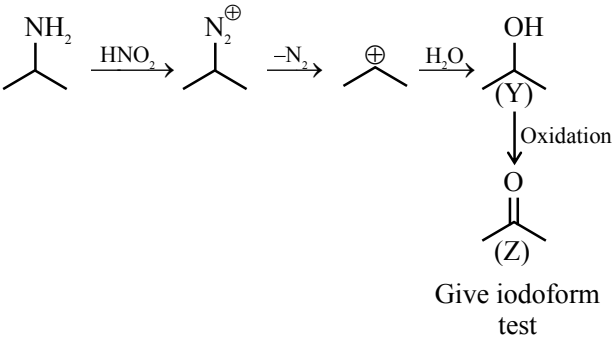
The structure of 'X' is:

(1) $CH_3CH_2CH_2NH_2$ (2) $Ph-\underset{\displaystyle CH_3}{\underset{|}{CH}}-NH_2$

(3) $\begin{matrix} CH_3 \\ CH_3 \end{matrix}\!\!>\!CH-NH_2$ (4) $CH_3-\underset{\displaystyle NH_2}{\underset{|}{CH_2CH}}-CH_3$

Ans. **(3)**

Sol.



Give iodoform test

64. Consider the following aqueous solutions.

I. 2.2 g Glucose in 125 mL of solution.

II. 1.9 g Calcium chloride in 250 mL of solution.

III. 9.0 g Urea in 500 mL of solution.

IV. 20.5 g Aluminium sulphate in 750 mL of solution.

The **correct** increasing order of boiling point of these solutions will be:

[Given: Molar mass in g mol^{-1}: H=1, C=12, N=14, O=16, Cl=35.5, Ca=40, Al=27 and S=32]

(1) I < II < III < IV (2) III < I < II < IV

(3) II < III < I < IV (4) II < III < IV < I

Ans. (1)

Sol. $\Delta T_b = i.k_b.m$

For dilute solution (M = m)

Molarity	i × m
(I) $M_{glucose} = \frac{2.2}{180} \times \frac{1000}{125} = 0.098$	0.098 × 1
(II) $M_{CaCl_2} = \frac{1.9}{111} \times \frac{1000}{250} = 0.068$	0.068 × 3
(III) $M_{urea} = \frac{9}{60} \times \frac{1000}{500} = 0.3$	0.3 × 1
(IV) $M_{Al_2(SO_4)_2} = \frac{20.5}{342} \times \frac{1000}{750} \simeq 0.08$	0.08 × 5

Order of $\Delta T_b = Al_2(SO_4)_3 > Urea > CaCl_2 > Glucose$

So order of BP = $Al_2(SO_4)_3 > Urea > CaCl_2 > Glucose$

So Answer will be I < II < III < IV

65. The correct order of acidic strength of the major products formed in the given reactions, is :

A. $PhNH_2 \xrightarrow[(3)\,H_3O^+/\Delta]{(1)\,NaNO_2+HCl(<5°C)\ (2)\,CuCN} [A]$

B. $CH_3CH_2CHO \xrightarrow[\Delta]{[Ag(NH_3)_2]^+, OH^-} [B]$

C. $CH_4 + O_2 \xrightarrow[(ii)\,Na_2Cr_2O_7/H^+]{(i)\,Mo_2O_3} [C]$

D. $PhCH_2MgBr + CO_2 \xrightarrow[H_3O^+]{Dry\ ether} [D]$

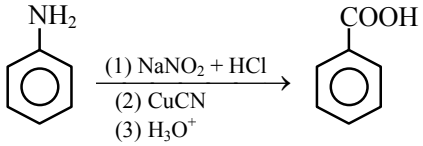
Choose the **correct** answer from the options given below :

(1) C > B > A > D (2) A > D > C > B

(3) A > D > B > C (4) C > A > D > B

Ans. (4)

Sol. Correct order of acidic strength of major product formed in the given reaction is

(A) 

(B) $CH_3CH_2–CHO \xrightarrow[\Delta]{Ag(NH_3)_2OH} CH_3–CH_2–COOH$

(C) $CH_4 + O_2 \xrightarrow[Na_2Cr_2O_7/H^+]{MO_2O_3} HCOOH$

(D) $Ph–CH_2MgBr + CO_2 \xrightarrow[H_3O^\oplus]{Dry\ ether} Ph–CH_2–COOH$

Ans. (4) C > A > D > B

66. Total number of alkali insoluble solid sulphonamides obtained by reaction of given amines with Hinsberg's reagent is …….. .

Aniline, N-Methylaniline, Methanamine,

N, N-Dimethylmethanamine,

N-Methyl methanamine, Phenylmethanamine,

N-propylaniline, N-phenylaniline,

N, N-Dimethylaniline, Allyl amine,

Isopropyl amine

(1) 4 (2) 2

(3) 8 (4) 5

Ans. (1)

Sol. 2° Amine are insoluble with hinsberg reagent.

Ph–NH–CH_3, Me–NH–Me,

Ph–NH–CH_2–CH_2–CH_3, Ph–NH–Ph

Ans. (1) 4

67. Consider the following reactions.

$Na_2B_4O_7 \xrightarrow{\Delta} 2X + Y$

$CuSO_4 + Y \xrightarrow{Non\text{-}Luminous\ flame} Z + SO_3$

$2Z + 2X + Carbon \xrightarrow{Luminous\ flame} 2Q + Na_2B_4O_7 + CO$

The oxidation states of Cu in Z and Q, respectively are :

(1) +2 and +2 (2) +2 and +1

(3) +1 and +2 (4) +1 and +1

Ans. (2)

Sol. $Na_2B_4O_7 \xrightarrow{\Delta} \underset{(X)}{(2NaBO_2)} + B_2O_3$

$CuSO_4 + B_2O_3 \xrightarrow[\text{Non-Luminous flame}]{\Delta} \underset{\text{(Blue bead)}}{\overset{+2}{Cu}}(BO_2)_2 + SO_3$

$\underset{(Z)}{}$

$2Cu(BO_2)_2 + 2NaBO_2 + C \xrightarrow[\text{Luminous Flame}]{\Delta}$

$2\underset{\text{Colorless}}{\overset{+1}{Cu}}BO_2 + Na_2B_4O_7 + CO$

$\underset{(Q)}{}$

68. For the given reaction;

$CaCO_3 + 2HCl \rightarrow CaCl_2 + H_2O + CO_2$

If 90 g $CaCO_3$ is added to 300 mL of HCl which contains 38.55% HCl by mass and has density 1.13 g mL^{-1}, then which of the following option is **correct**?

Given molar mass of H, Cl, Ca and O are 1, 35.5, 40 and 16 g mol^{-1} respectively.

(1) 64.97 g of HCl remains unreacted

(2) 32.85 g of $CaCO_3$ remains unreacted

(3) 97.30 g of HCl reacted

(4) 60.32 g of HCl reamains unreacted

Ans. (1)

Sol. Density of HCl solution (d) =1.13g/ml

V=300ml

Wt. of HCl solution = 339 g

Wt. of HCl = $339 \times \frac{38.55}{100} = 130.68$ g

(LR)

$CaCO_3 + 2HCl \rightarrow CaCl_2 + H_2O + CO_2$

$\frac{90}{100}$ $\quad$ $\frac{130.68}{36.5}$

=0.90mole $\quad$ = 3.58 mole

Moles of HCl remained = 1.78 mole.

Mass of HCl remained = 64.97 g.

69. The correct increasing order of spin-only magnetic moment values of the complex ions $[MnBr_4]^{2-}$ (A), $[Cu(H_2O)_6]^{2+}$ (B), $[Ni(CN_4)]^{2-}$ (C) and $[Ni(H_2O)_6]^{2+}$ (D) is:

(1) A = B < C < D $\quad$ (2) A = B < D < C

(3) C = D < B < A $\quad$ (4) C < B < D < A

Ans. (4)

Sol. Mn^{2+} $3d^5$ n = 5

Cu^{2+} $3d^9$ $t_{2g}^{2,2,2}$ $e_g^{2,1}$ n = 1

Ni^{2+} $3d^8$ square planar n = 0

Ni^{2+} $3d^8$ tetrahedral $e^{2,2}$ $t_2^{2,1,1}$ n = 2

70. A student has been given 0.314 g of an organic compound and asked to estimate Sulphur. During the experiment, the student has obtained 0.4813 g of barium sulphate. The percentage of sulphur present in the compound is _____ .

(Given Molar mass in g mol^{-1} S:32, $BaSO_4$: 233)

(1) 42.10% $\quad$ (2) 63.15%

(3) 21.05% $\quad$ (4) 48.24%

Ans. (3)

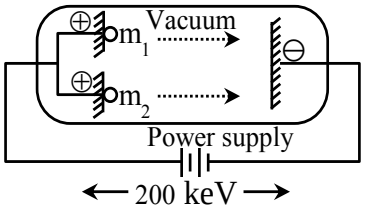
Sol. $\%S = \frac{32}{233} \times \frac{0.4813}{0.314} \times 100$

$= 21.052\%$

Ans. (3) 21.05%

SECTION-B

71. Two positively charged particles m_1 and m_2 have been accelerated across the same potential difference of 200 keV as shown below.



[Given mass of m_1 = 1 amu and m_2 = 4 amu]

The deBroglie wavelength of m_1 will be x times of m_2. The value of x is _____. (nearest integer)

Ans. (2)

Sol. $\lambda_d = \frac{h}{\sqrt{2mK.E.}}$

Here KE is same i.e. 200 k eV

So $\lambda_d \propto \frac{1}{\sqrt{m}}$

$\frac{(\lambda_d)_{m_1}}{(\lambda_d)_{m_2}} = \sqrt{\frac{m_2}{m_1}} = \sqrt{4} = 2$

$(\lambda_d)_{m_1} = 2(\lambda_d)_{m_2}$

So x = 2.

72. $A \rightarrow B$ (first reaction)

$C \rightarrow D$ (second reaction)

Consider the above two first-order reactions. The rate constant for first reaction at 500 K is double of the same at 300 K. At 500 K, 50% of the reaction becomes complete in 2 hour. The activation energy of the second reaction is half of that of first reaction. If the rate constant at 500 K of the second reaction becomes double of the rate constant of first reaction at the same temperature; then rate constant for the second reaction at 300 K is _____ $\times 10^{-1}$ hour^{-1} (nearest integer).

Ans. (5)

Sol. For $A \xrightarrow{K_1} B$

$\ln(2) = \frac{E_{a_1}}{R}\left[\frac{1}{300} - \frac{1}{500}\right]$

$E_{a_1} = \frac{\ln 2 \times R \times 1500}{2}$

$E_{a_2} = \frac{E_{a_1}}{2} = \frac{\ln 2 \times R \times 1500}{4}$

$(K_1)_{\text{at 500 K}} = \frac{\ln 2}{2}$

$(K_2)_{\text{at 500 K}} = \ln 2$

Now for $C \xrightarrow{K_2} D$

$\ln\left[\frac{(K_2)_{\text{at 500K}}}{(K_2)_{\text{at 300K}}}\right] = \left(\frac{\ln 2 \times R \times 1500}{4}\right) \times \frac{1}{R} \times \left[\frac{1}{300} - \frac{1}{500}\right]$

$(K_2)_{\text{at 300 K}} = \frac{\ln 2}{\sqrt{2}} = 0.49$

$(K_2)_{\text{at 300 K}} = 4.9 \times 10^{-1}$

Ans is 5.

73. For strong electrolyte Λ_m increases slowly with dilution and can be represented by the equation

$\Lambda_m = \Lambda^\circ_m - Ac^{1/2}$

Molar conductivity values of the solutions of strong electrolyte AB at 18°C are given below :

c [mol L^{-1}]	0.04	0.09	0.16	0.25
Λ_m [S cm^2 mol^{-1}]	96.1	95.7	95.3	94.9

The value of constant A based on the above data [in S cm^2 mol^{-1}/(mol/L)$^{1/2}$] unit is _____.

Ans. (4)

Sol. Using equation : $\Lambda_m = \Lambda^0_m - A\sqrt{c}$

$96.1 = \Lambda^0_m - A\sqrt{0.04}$

$96.1 = \Lambda^0_m - A \times 0.2$ ……..(1)

$95.7 = \Lambda^0_m - A \times \sqrt{0.09}$

$95.7 = \Lambda^0_m - A \times 0.3$ ……..(2)

From eq. (1) and eq. (2)

A = 4

74. A volume of x mL of 5 M $NaHCO_3$ solution was mixed with 10 mL of 2 M H_2CO_3 solution to make an electrolytic buffer. If the same buffer was used in the following electrochemical cell to record a cell potential of 235.3 mV, then the value of x = _____ mL (nearest integer).

$Sn(s) \mid Sn(OH)_6^{2-}$ (0.5 M) $\mid HSnO_2^-$ (0.05 M) $\mid OH^- \mid Bi_2O_3(s) \mid Bi(s)$

Consider upto one place of decimal for intermediate calculations

$$\left[\begin{array}{ll} \text{Given :} & E^o_{HSnO_2^-|Sn(OH)_6^{2-}} = -0.9\,V \\ & E^o_{Bi_2O_3|Bi} = -0.44V \\ & pKa_{(H_2CO_3)} = 6.11 \\ & \frac{2.303RT}{F} = 0.059V \\ & \text{Anti}\log(1.29) = 19.5 \end{array}\right]$$

Allen Ans. (Bonus)

NTA Ans. (78)

Sol. We have considered

$$E^{o}_{[Sn(OH)_6]^{2-}/HSnO_2^-} = -0.9\,V$$

$$Pt|HSnO_2^-(aq),[Sn(OH)_6]^{2-}(aq),OH^-(aq)|Bi_2O_3(s)|Bi(s)|$$
$$0.5M \qquad 0.05M$$

$$E^{\circ}_{cell} = +0.9 - 0.44 = 0.46\ V$$

Oxidation Half :

$$HSnO_2^- + H_2O + 3OH^- \rightarrow [Sn(OH)_6]^{2-} + 2e^-$$

Reduction Half :

$$Bi_2O_3 + 3H_2O + 6e^- \rightarrow 2Bi + 6OH^-$$

$$3HSnO_2^-(aq) + Bi_2O_3(s) + 6H_2O + 3OH^-(aq) \rightarrow 3[Sn(OH)_6]^{2-}(aq) + 2Bi(s)$$

$$E_{cell} = E^{o}_{cell} - \frac{0.059}{6}\log\frac{(0.5)^3}{(0.05)^3 \times [OH^-]^3}$$

$$0.2353 = 0.46 - \frac{0.059}{6} \times 3\log\left[\frac{10}{[OH^-]}\right]$$

$$\log\left[\frac{10}{OH^-}\right] = \frac{2 \times 0.2247}{0.059} = 7.6$$

$1 + pOH = 7.6$

$pOH = 6.6$

$pH = 14 - 6.6 = 7.4$

$$pH = pK_{a_1} + \log\frac{[HCO_3^-]}{[H_2CO_3]}$$

$$7.4 = 6.11 + \log\frac{5x}{20}$$

$$1.29 = \log\frac{x}{4}$$

$$\frac{x}{4} = 19.5$$

$x = 78$

Note : In question paper, $E^{o}_{HSnO_2^-/[Sn(OH)_6]^{2-}} = -0.9\,V$ data is given, but NTA has given answer by considering $E^{o}_{[Sn(OH)_6]^{2-}/HSnO_2^-} = -0.9\,V$ therefore this question should be **BONUS**.

75. The number of isoelectronic species among Sc^{3+}, Cr^{2+}, Mn^{3+}, Co^{3+} and Fe^{3+} is 'n'. If 'n' moles of AgCl is formed during the reaction of complex with formula $CoCl_3(en)_2NH_3$ with excess of $AgNO_3$ solution, then the number of electrons present in the t_{2g} orbital of the complex is _____.

Ans. **(6)**

Sol.

Sc^{+3}	18
Cr^{+2}	22
Mn^{+3}	22
Co^{+3}	24
Fe^{+3}	23

Cr^{2+} and Mn^{3+} are isoelectronic

$n = 2$

Complex is : $[Co(en)_2NH_3Cl]Cl_2$

$\Rightarrow Co^{3+} \quad 3d^6 \quad t_{2g}^{2,2,2} \quad e_g^{0,0}$

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