

PUC PYQ 2025

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CHEMISTRY

- Q1** Incorrect statement regarding vitamins, [PUC 2025]
 (A) Excess vitamin intake is harmful
 (B) Most of the vitamins contain amino groups
 (C) Vitamins can be produced by plants
 (D) Vitamin deficiency causes diseases
- Q2** Camphor in nitrogen gas, is an example of _____. [PUC 2025]
 (A) liquid Solutions
 (B) solid Solutions
 (C) gaseous Solutions
 (D) aqueous solution
- Q3** Which of the following is not a subdivision of structural isomerism? [PUC 2025]
 (A) Coordination isomerism
 (B) Linkage isomerism
 (C) Ionisation isomerism
 (D) Geometrical isomerism
- Q4** Cumene hydroperoxide on hydrolysis with dilute acid gives _____. [PUC 2025]
 (A) alcohol and phenol
 (B) only phenol
 (C) phenol and acetone
 (D) alcohol and acetone
- Q5** An example of a pseudo first-order reaction is, [PUC 2025]
 (A) The decomposition of gaseous ammonia on a hot platinum surface
 (B) Photochemical reaction between hydrogen and chlorine
 (C) Inversion of cane sugar
 (D) Hydrogenation of ethene
- Q6** The hybridisation of 'N' atom in trimethyl amine is, [PUC 2025]
 (A) sp^3
 (B) sp^2
 (C) sp
 (D) dsp^2
- Q7** The IUPAC name of

$$\begin{array}{c} \text{Br} \qquad \qquad \text{O} \\ | \qquad \qquad \parallel \\ \text{H}_3\text{C}-\text{CH}-\text{CH}_2-\text{C}-\text{H} \end{array}$$

 (A) 3-bromobutyraldehyde
 (B) 2-bromopropanaldehyde
 (C) 3-bromobutanal
 (D) 2-bromobutanal
- Q8** Select non-semiconductor from the following, [PUC 2025]
 (A) silicon
 (B) carbon-black
 (C) gallium arsenide
 (D) doped silicon
- Q9** Statement I: Ammonolysis of alkyl halides has the disadvantage of yielding a mixture of primary, secondary and tertiary amines and also a quaternary ammonium salt.
 Statement II: Tertiary amine is obtained as a major product by taking large excess of ammonia in ammonolysis of alkyl halides.
 In the light of the above statements, choose the appropriate answer from the options given below: [PUC 2025]
 (A) Statement I is incorrect but Statement II is correct
 (B) Both Statement I and Statement II are correct
 (C) Both Statement I and Statement II are incorrect
 (D) Statement I is correct but Statement II is incorrect



Q10 The structure of pentacarbonyliron(0) is, [PUC 2025]

- (A) tetrahedral
- (B) trigonal bipyramidal
- (C) octahedral
- (D) square pyramidal

Q11 Two compounds 'A' and 'B' were being tested for their boiling points. It was observed that 'A' started boiling after 'B', when both were subjected to same conditions. If the compound 'B' is acetone, which of the following can be compound 'A'?

- (A) Propanal
- (B) Propan-1-ol
- (C) Methoxyethane
- (D) n-Butane

Q12 Select the correct order of melting points of isomeric dichlorobenzenes. [PUC 2025]

- (A) o-dichlorobenzene > m-dichlorobenzene > p-dichlorobenzene
- (B) p-dichlorobenzene > m-dichlorobenzene > o-dichlorobenzene
- (C) p-dichlorobenzene > o-dichlorobenzene > m-dichlorobenzene
- (D) m-dichlorobenzene > o-dichlorobenzene > p-dichlorobenzene

Q13 Match the following given in List I with List II:

List I	List II
(i) V_2O_5	(A) Oxidation of ethyne to ethanal
(ii) $TiCl_4$ with $Al(CH_3)_3$	(B) Polymerisation of alkynes
(iii) $PdCl_2$	(C) Oxidation of SO_2 in the manufacture of sulphuric acid
(iv) Nickel complexes	(D) Manufacture polyethylene

Choose the correct option: [PUC 2025]

- (A) i-C, ii-D, iii-A, iv-B
- (B) i-A, ii-B, iii-C, iv-D
- (C) i-A, ii-C, iii-B, iv-D
- (D) i-C, ii-A, iii-D, iv-B

Q14 Which of the following explains the increase in the reaction rate by a catalyst? [PUC 2025]

- (A) Catalyst decreases the rate of backward reaction so that rate of forward reaction increases
- (B) Catalyst provides extra energy to reacting molecules, so that they produce effective collisions
- (C) Catalyst provides an alternative pathway by reducing the activation energy between thereactants and products
- (D) Catalyst increases the number of collisions between the reacting molecules



- Q15** Sufficient amount of 2-methylpropan-2-ol heated with 20% phosphoric acid at 358 K gives main product 'X' with the elimination of water and tert-butyl alcohol undergoes dehydration when it is passed over heated copper at 573 K gives 'Y'. Pick the correct statement regarding X and Y. [PUC 2025]
 (A) The boiling points of 'X' and 'Y' are equal
 (B) The boiling point of 'X' is greater than the boiling point of 'Y'
 (C) The boiling point of 'X' is lesser than the boiling point of 'Y'
 (D) At room temperature both 'X' and 'Y' exists as a solids
- Q16** Arrhenius factor is also called _____ factor. [PUC 2025]
- Q17** Paramagnetism arises from the presence of _____ electrons. [PUC 2025]
- Q18** _____ is one of the most common freon in industrial use. [PUC 2025]
- Q19** The electrophilic attack of $\text{H}_3\text{O}^{\oplus}$ on alkene forms _____. [PUC 2025]
- Q20** The hormone glucocorticoids control the _____ metabolism. [PUC 2025]
- Q21** Explain Wurtz reaction with suitable chemical equation. [PUC 2025]
- Q22** Molarity (M), molality (m) and mole fraction (χ) are some methods for expressing concentration of solutions. Which of these are temperature dependent? Give reason. [PUC 2025]
- Q23** What are non-essential amino acids? Name an optically inactive naturally occurring α -amino acid.
- Q24** Write any two characteristic properties of interstitial compounds. [PUC 2025]
- Q25** While separating a mixture of ortho and para nitrophenols by steam distillation, name the isomer which will be steam volatile. Give reason. [PUC 2025]
- Q26** State any three postulates of Werner's theory of coordination compounds [PUC 2025]
- Q27** Write the balanced chemical equations involved in the manufacture of potassium dichromate ($\text{K}_2\text{Cr}_2\text{O}_7$) from chromite ore (FeCr_2O_4). [PUC 2025]
- Q28** $[\text{Co}(\text{NH}_3)_5\text{Br}]\text{SO}_4$ is an octahedral coordination compound. Write its IUPAC name and draw the diagram which indicates the splitting of d-orbitals in above complex with respect to CFT (Crystal Field Theory). [PUC 2025]
- Q29** What is lanthanoid contraction? Write one comparison and one difference between lanthanoids and actinoids with respect to oxidation states shown by them. [PUC 2025]
- Q30** Write the facial (fac) and meridional (mer) isomeric structures of $[\text{Co}(\text{NH}_3)_3(\text{NO}_2)_3]$. Mention the coordination number of a metal ion in an above complex. [PUC 2025]
- Q31** Derive an integrated rate equation for the rate constant of zero-order reaction. [PUC 2025]
- Q32** Write a neat labelled diagram, cell representation and half-cell reaction of Standard Hydrogen Electrode (S.H.E.). [PUC 2025]
- Q33** Define azeotropes. What type of azeotropes are formed by solutions with negative deviation from Raoult's law? Give an example for it. [PUC 2025]



- Q34** Lead storage battery is commonly used as a secondary cell in automobiles. What is secondary cell? Write down the reactions occurs at anode and cathode during discharging of the lead storage battery. [PUC 2025]
- Q35** (a) Write the S_N2 mechanism for conversion of chloromethane to methanol. Mention its order.
(b) What is racemic mixture? Represent the butan-2-ol in racemic mixture form. [PUC 2025]
- Q36** (a) Amylose and Amylopectin are two components starch. Write any two differences between them.
(b) List the any two nitrogenous bases commonly found in both RNA and DNA.
(c) Name the enzyme that catalyses hydrolysis of maltose into glucose. [PUC 2025]
- Q37** (a) Write the mechanism of addition of HCN to carbonyl group in presence of a base.
(b) Explain Rosenmund reduction with chemical equation. [PUC 2025]
- Q38** (a) Describe carbylamine reaction with suitable chemical equation.
(b) Explain the conversion of aniline to benzene diazonium chloride with chemical equation.
(c) Among aryl amines and ammonia which is more basic? [PUC 2025]
- Q39** (a) Lucas reagent is an important reagent which helps to distinguish between three classes of alcohols.
Write the chemical composition of the Lucas reagent and explain how the above reagent helps to distinguish 1° and 3° alcohols?
(b) Illustrate preparation of ether by Williamson synthesis with a general chemical equation. [PUC 2025]
- Q40** An organic compound 'A' on treatment with ethanoic acid in the presence of hydrochloric acid gas as a catalyst produces an ester 'B'. 'A' on oxidation with CrO_3 in an anhydrous medium gives 'C'. 'C' is heated with concentrated KOH followed by acidification with dilute HCl generates 'A' and 'D'. Three moles of 'D' reacts with PCl_3 gives three moles of compound with molecular formula HCOCl and 'E'. 'D' is reduced to 'A' by lithium aluminium hydride followed by hydrolysis. Write the molecular formulas of the compound 'A', 'B', 'C', 'D' and 'E'. [PUC 2025]
- Q41** The initial concentration of N_2O_5 in the following first order reaction $\text{N}_2\text{O}_5(\text{g}) \rightarrow 2\text{NO}_2(\text{g}) + \frac{1}{2}\text{O}_2(\text{g})$ was $1.24 \times 10^{-2} \text{ mol L}^{-1}$ at 318 K. The concentration of N_2O_5 after 60 minutes was $0.20 \times 10^{-2} \text{ mol L}^{-1}$. Calculate the rate constant of the reaction at 318 K. [PUC 2025]
- Q42** Calculate the osmotic pressure in pascals exerted by a solution prepared by dissolving 1.0 g of polymer of molar mass 185,000 in 450 mL of water at 37°C .
[$R = 8.314 \times 10^3 \text{ Pa L K}^{-1} \text{ mol}^{-1}$] [PUC 2025]
- Q43** The standard electrode potential for Daniel cell is 1.1V. Calculate the standard Gibbs energy for the reaction :
 $\text{Zn}(\text{s}) + \text{Cu}^{2+}(\text{aq}) \rightarrow \text{Zn}^{2+}(\text{aq}) + \text{Cu}(\text{s})$
[PUC 2025]
- Q44** The vapour pressure of pure liquids A and B are 450 and 700 mm Hg respectively, at 350 K. Find out the composition of the liquid mixture if total vapour pressure is 600 mm Hg. [PUC 2025]



Q45 The rate constant of a first order reaction increases from $2 \times 10^{-2} \text{ s}^{-1}$ to $4 \times 10^{-2} \text{ s}^{-1}$ when the temperature changes from 300 K to 310 K. Calculate the energy of activation (E_a).
[$\log 2 = 0.3010$, $\log 2.5 = 0.3979$, $\log 4 = 0.6020$, $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$] [PUC 2025]

Q46 The conductivity of $0.001028 \text{ mol L}^{-1}$ acetic acid is $4.95 \times 10^{-5} \text{ S cm}^{-1}$. Calculate its dissociation constant if Λ_m° for acetic acid is $390.5 \text{ S cm}^2 \text{ mol}^{-1}$. [PUC 2025]



Answer Key

Q1 B

Q2 C

Q3 D

Q4 C

Q5 C

Q6 A

Q7 C

Q8 B

Q9 D

Q10 B

Q11 B

Q12 C

Q13 A

Q14 C

Q15 A

Q16 (H & S)

Q17 (H & S)

Q18 (H & S)

Q19 (H & S)

Q20 (H & S)

Q21 (H & S)

Q22 (H & S)

Q23 (H & S)

Q24 (H & S)

Q25 (H & S)

Q26 (H & S)

Q27 (H & S)

Q28 (H & S)

Q29 (H & S)

Q30 (H & S)

Q31 (H & S)

Q32 (H & S)

Q33 (H & S)

Q34 (H & S)

Q35 (H & S)

Q36 (H & S)

Q37 (H & S)

Q38 (H & S)

Q39 (H & S)

Q40 (H & S)

Q41 (H & S)

Q42 (H & S)

Q43 (H & S)

Q44 (H & S)

Q45 (H & S)

Q46 (H & S)



Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

Most of the vitamins contain amino groups

Q2 Text Solution:

gaseous Solutions

Q3 Text Solution:

Geometrical isomerism

Q4 Text Solution:

phenol and acetone

Q5 Text Solution:

Inversion of cane sugar

Q6 Text Solution:

sp^3

Q7 Text Solution:

3-bromobutanol

Q8 Text Solution:

carbon-black

Q9 Text Solution:

Statement I is correct but Statement II is incorrect

Q10 Text Solution:

trigonal bipyramidal

Q11 Text Solution:

Propan-1-ol

Q12 Text Solution:

p-dichlorobenzene > o-dichlorobenzene > m-dichlorobenzene

Q13 Text Solution:

i-C, ii-D, iii-A, iv-B

Q14 Text Solution:

Catalyst provides an alternative pathway by reducing the activation energy between the reactants and products

Q15 Text Solution:

The boiling points of 'X' and 'Y' are equal

Q16 Text Solution:

pre-exponential

Q17 Text Solution:

unpaired

Q18 Text Solution:

CCl_2F_2

Q19 Text Solution:

carbocation

Q20 Text Solution:

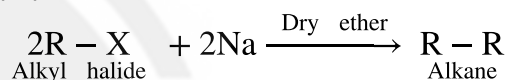
carbohydrate

Q21 Text Solution:

Alkyl halides react with sodium in dry ether to give hydrocarbons.

$2RX + 2Na \rightarrow RR + 2NaX$

(or)



+ 2 NaX

(Any suitable chemical equation; statement 1 mark and equation 1 mark (or) self-explanatory equation 2 mark)

Q22 Text Solution:

Molarity (M) is temperature dependent.

Reason: Molarity is a function of temperature.

This is because volume depends on temperature.

(or)

Volume of the solution varies with the change in temperature.

(or)

Molarity

$\propto \frac{1}{\text{Volume of the solution}}$ (or) Molarity

$\propto \frac{1}{\text{Temperature}}$

Q23 Text Solution:

The amino acids, which can be synthesised in the body, are known as non-essential amino acids.

Optically inactive naturally occurring α -amino acid: Glycine (or) Gly



Q24 Text Solution:

- (i) They have high melting points, higher than those of pure metals.
- (ii) They are very hard.
- (iii) They retain metallic conductivity.
- (iv) They are chemically inert.

Q25 Text Solution:

o-Nitrophenol

Reason: Due to the presence of intramolecular hydrogen bonding of o-Nitrophenol.

(or) Absence of intermolecular hydrogen bonding.

Q26 Text Solution:

1. In co-ordination compounds metals show two types of valences (linkages)

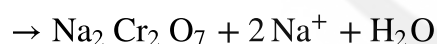
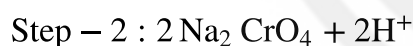
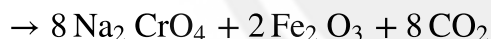
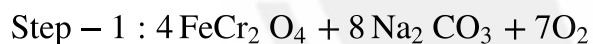
(a) Primary valency (b) Secondary valency

2. Primary valency ionisable, satisfied by negative ions.

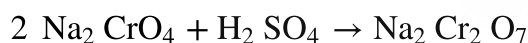
3. Secondary valency non-ionisable, satisfied by negative ions or neutral molecules.

4. Secondary valency is equal to coordination number.

5. Secondary valency is directional in nature.

Q27 Text Solution:

(or)



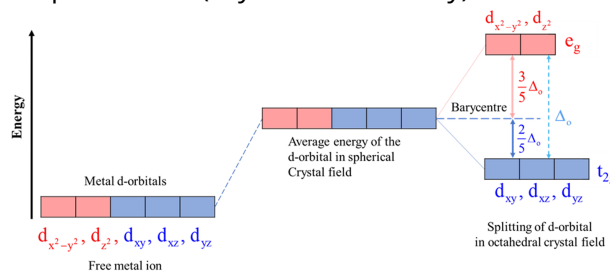
[Note

: FeCr_2O_4 can also be written as $\text{FeO} \cdot \text{Cr}_2\text{O}_3$]

Q28 Text Solution:

IUPAC name: pentaamminebromidocobalt(III) sulphate. 1

Splitting of d-orbitals in above complex with respect to CFT (Crystal Field Theory):

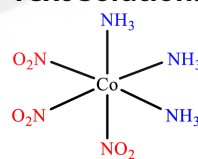
**Q29 Text Solution:**

The overall decrease in atomic and ionic radii from lanthanum to lutetium is called lanthanoid contraction.

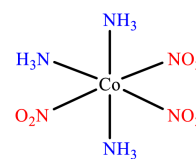
Comparison: Both exhibit common oxidation state of +3.

Difference:

Lanthanoids	Actinoids
Lanthanoids not show greater range (variable oxidation states) of oxidation states.	Actinoids show greater range (variable oxidation states) of oxidation states.
Show maximum oxidation state is +4	Show maximum oxidation state +7

Q30 Text Solution:

Fac isomer



Mer isomer

Coordination number: 6 (or) Six



Q31 Text Solution:

Consider a zero-order reaction, $R \rightarrow P$

Let $[R]_0$ be initial concentration of the reactant and

$[R]$ be concentration of the reactant at any

time "t". $\text{Rate} = \frac{-d[R]}{dt} = k[R]^0$

Where k is rate constant of a zero-order

reaction $\text{Rate} = \frac{-d[R]}{dt} = k \times 1$

$d[R] = -k dt$

Integrating both sides: $[R] = -kt + I$ (i)

(I = Integration constant)

When $t = 0$, $[R] = [R]_0$; Substituting in equation

(i),

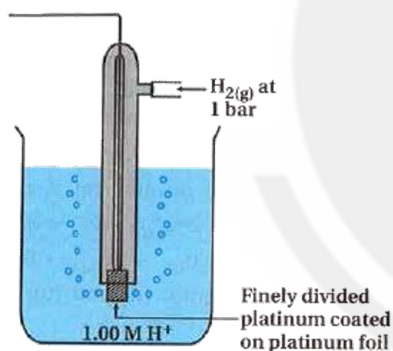
$[R]_0 = -k \times 0 + I$

$[R]_0 = I$

Substituting value of ' I ' in equation (i), $[R] = -kt$

$+ [R]_0$

$k = \frac{[R]_0 - [R]}{t}$

Q32 Text Solution:

Cell representation : $Pt(s) | H_2(g) | H^+(aq)$

Half – cell reaction :

At anode : $\frac{1}{2} H_2(g) \rightarrow H^+_{(aq)} + e^-$

(or)

At cathode : $H^+_{(aq)} + e^- \rightarrow \frac{1}{2} H_2(g)$

(or)

$\frac{1}{2} H_2(g) \rightleftharpoons H^+_{(aq)} + e^-$

Q33 Text Solution:

It is defined as the "binary mixtures having the same composition in liquid and vapour phase and boil at a constant temperature".

Maximum boiling azeotropes

Example: 68% nitric acid and 32% water (or)

80% H_2O and 20% HCl (or) Chloroform and

acetone

Q34 Text Solution:

Rechargeable cell is called secondary cell.

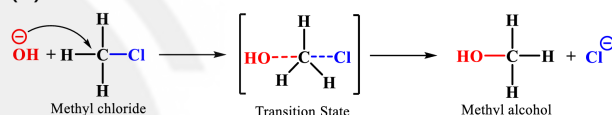
Anode : $Pb(s) + SO_4^{2-}(aq) \rightarrow PbSO_4(s) + 2e^-$

Cathode : $PbO_2(s) + SO_4^{2-}(aq)$

$+ 4H^+(aq) + 2e^- \rightarrow PbSO_4(s) + 2H_2O(l)$

Q35 Text Solution:

(a)



Order: 2 (or) Two

(b) Equimolar mixture of d and l isomers is called racemic mixture.

(or)

Mixture of 50% d and 50% l isomers is called racemic mixture.

Represent the butan-2-ol in racemic mixture form:

dl -butan-2-ol (or) $(\pm)$ butan-2-ol

Q36 Text Solution:

(a)

Amylase	Amylopectin
It is water soluble component.	It is water insoluble component.
It constitutes about 15-20% of starch.	It constitutes about 80-85% of starch.
Amylose is unbranched chain polymer.	Amylopectin is branched chain polymer.
α -D-glucose units held together by C_1-C_4 glycosidic linkage.	α -D-glucose units held together by C_1-C_4 and C_1-C_6 glycosidic linkage.

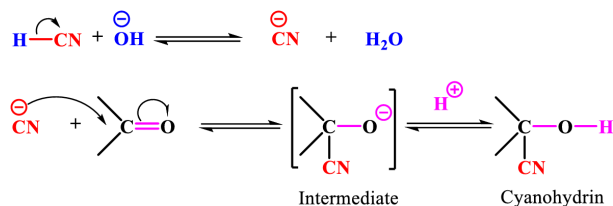
(b) Adenine (A), Guanine (G) and Cytosine (C)

(c) Maltase

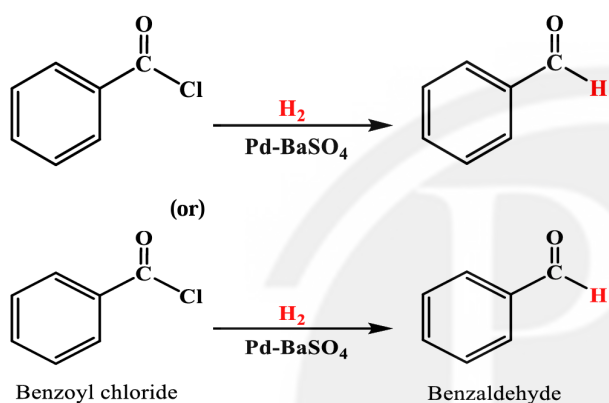


Q37 Text Solution:

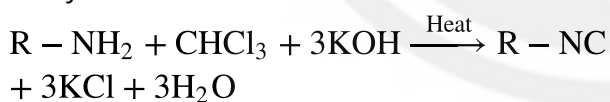
(a)



(b) Hydrogenation of acyl chloride over palladium on barium sulphate gives aldehyde. This reaction is called Rosenmund reduction.

**Q38 Text Solution:**

(a) Aliphatic and aromatic primary amines on heating with chloroform and ethanolic potassium hydroxide form isocyanides or carbylamines. This reaction is known as carbylamine reaction.

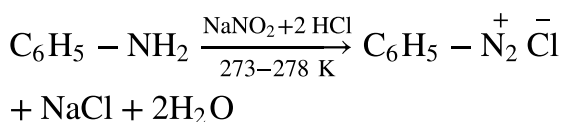


(or)

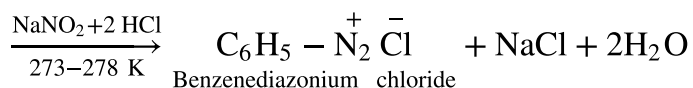
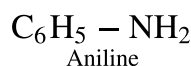


(Any suitable chemical equation; statement 1 mark and equation 1 mark (or) self-explanatory equation 2 mark)

(b) Benzene diazonium chloride is prepared by the reaction of aniline with nitrous acid (HNO_2 (or) $\text{NaNO}_2 + \text{HCl}$) at 273-278K.



(or)



(Statement 1 mark and equation 1 mark (or) self-explanatory equation 2 mark)

(c) Ammonia is more basic than aryl amines.

Q39 Text Solution:

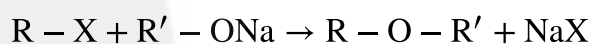
(a) Chemical composition of the Lucas reagent:

Conc. HCl and Anhyd. ZnCl_2 (or) Conc. HCl and ZnCl_2

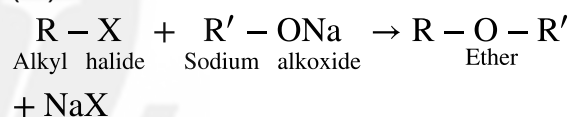
With Lucas reagent: Primary alcohols do not give turbidity at room temperature.

Tertiary alcohols give immediate turbidity.

(b) Alkyl halide and sodium alkoxide reacts to give ether. This reaction is called Williamson's ether synthesis.



(or)

**Q40 Text Solution:**

'A'	CH_3OH (or) $\text{H}_3\text{C}-\text{OH}$ (or) CH_4O
'B'	$\text{CH}_3\text{COOCH}_3$ (or) $\text{H}_3\text{C}-\text{C}(=\text{O})-\text{O}-\text{CH}_3$ (or) $\text{C}_3\text{H}_6\text{O}_2$
'C'	HCHO (or) $\text{H}-\text{C}(=\text{O})-\text{H}$ (or) CH_2O (or) H_2CO
'D'	HCOOH (or) $\text{H}-\text{C}(=\text{O})-\text{O}-\text{H}$ (or) CH_2O_2
'E'	H_3PO_3

Q41 Text Solution:

Given; $[R]_0 = 1.24 \times 10^{-2} \text{ mol}$

$$L^{-1} [R] = 0.20 \times 10^{-2} \text{ mol L}^{-1} \text{ k} = ?$$

$$k = \frac{2.303}{t} \log \frac{[R]_0}{[R]}$$

$$k = \frac{2.303}{60} \log \frac{1.24 \times 10^{-2}}{0.20 \times 10^{-2}}$$

$$k = \frac{2.303}{60} \log 6.2 = \frac{2.303}{60} \times 0$$

$$.7924 \quad (\text{or}) \quad k = \frac{2.303}{3600} \times 0.7924$$

$$k = 0.0304 \text{ min}^{-1} \quad (\text{or}) \quad k = 3.04$$

$$\times 10^{-2} \text{ min}^{-1} \quad (\text{or}) \quad k = 0.000506 \text{ s}^{-1} \quad (\text{or}) \quad k = 5.06 \times 10^{-4} \text{ s}^{-1}$$

Q42 Text Solution:

$$W_2 = 1 \text{ g}, \quad M_2 = 185000 \quad V = 450 \text{ mL} \\ = 0.45 \text{ L}$$

$$\pi = \frac{W_2 RT}{M_2 V} \quad (\text{or}) \quad \pi = \frac{nRT}{V}$$

$$\pi = \frac{1 \times 8.314 \times 10^3 \times 310}{185000 \times 0.45}$$

$$\pi = 0.03096 \times 10^3$$

$$\pi = 30.96 \text{ Pa}$$

Q43 Text Solution:

$$\Delta_r G^\circ = -nFE_{\text{Cell}}^\circ$$

$$n = 2, F = 96487 \text{ C mol}^{-1} \quad (\text{or}) \quad F$$

$$= 96500 \text{ C mol}^{-1} \quad \text{and} \quad E_{\text{Cell}}^\circ = 1.1 \text{ V}$$

$$\therefore \Delta_r G^\circ = -2 \times 96487 \times 1.1 \quad (\text{or}) \quad \therefore \Delta_r G^\circ = -2 \times 96500 \times 1.1$$

$$\Delta_r G^\circ = -21227 \text{ J mol}^{-1} \quad (\text{or}) \quad \Delta_r G^\circ =$$

$$-212.27 \text{ kJ mol}^{-1} \quad (\text{or}) \quad \Delta_r G^\circ = -212.30 \text{ kJ mol}^{-1}$$

Q44 Text Solution:

$$p_A^\circ = 450 \text{ mm Hg} \quad \text{and} \quad p_B^\circ = 700 \text{ mm Hg}$$

$$p_{\text{total}} = p_B^\circ + (p_A^\circ - p_B^\circ) \chi_A$$

$$600 = 700 + (450 - 700) \chi_A$$

$$\therefore \chi_A = \frac{100}{250} = 0.40$$

$$\therefore \chi_B = 1 - 0.40 = 0.60$$

Q45 Text Solution:

$$\log \frac{k_2}{k_1} = \frac{E_a}{2.303R} \left(\frac{T_2 - T_1}{T_1 T_2} \right)$$

$$T_1 = 300 \text{ K}, \quad T_2 = 310 \text{ K}, \quad k_1 = 2 \times 10^{-2} \quad \text{and} \quad k_2 = 4 \times 10^{-2}$$

$$\log \frac{4 \times 10^{-2}}{2 \times 10^{-2}} = \frac{E_a}{2.303 \times 8.314} \left(\frac{310 - 300}{300 \times 310} \right)$$

$$\therefore E_a = \frac{\log 2 \times 2.303 \times 8.314 \times 300 \times 310}{10}$$

$$E_a = 53598.594 \text{ J mol}^{-1} \quad (\text{or}) \quad E_a = 53.59 \text{ kJ mol}^{-1} \quad (\text{or}) \quad E_a = 53.60 \text{ kJ mol}^{-1}$$

Q46 Text Solution:

$$\Lambda_m = \frac{\kappa \times 1000}{c} = \frac{4.95 \times 10^{-5} \times 1000}{0.001028} = 48.15 \text{ S cm}^2 \text{ mol}^{-1}$$

$$\alpha = \frac{\Lambda_m}{\Lambda_m^\circ} = \frac{48.15}{390.5} = 0.1233$$

$$k = \frac{c\alpha^2}{(1-\alpha)} = \frac{0.001028 \times (0.1233)^2}{(1-0.1233)} = 1.78 \times 10^{-5} \text{ mol L}^{-1}$$



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