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CHEMISTRY

COMPULSORY QUESTIONS

COLLECTED FROM ALL PREVIOUS YEAR QUESTION PAPERS

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12TH CHEMISTRY COMPULSORY QNS - SS PRITHVI 2024-2025

Getting in:

- **It gives me great pride and pleasure in bringing to you, this wonderful booklet.**
- **The compulsory questions are collected from almost all the available previous years' question papers, which will give an idea about to study the topics which will help them to tackle these compulsory questions.**

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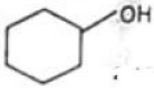
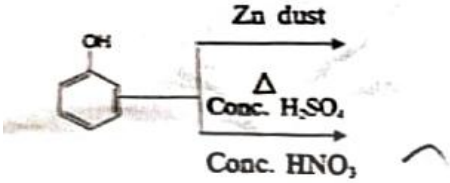
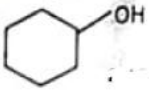
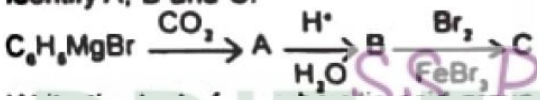
	FIRST MID TERM
1	CO is a reducing agent.justify with an example.
2	Barium has a body centered cubic unit cell with a length of 508 pm along an edge.what is the density of barium in g cm^{-1}.
3	Complete the reaction CH_3-O-CH_2 CH_3 + HI $\xrightarrow{\Delta}$
4	Calculate the no of atoms in a fcc unit cell
5	The rate constant for a first order reaction is 1.54×10^{-3} S^{-1}. Calculate its half life time. *{repeated}*
6	Sodium metal crystallizes in bcc structure with the edge length of the unit cell 4.3×10^{-8} cm. Calculate **the radius of the sodium atom.**
7	**Write the equation when ter-butyl methyl ether allowed to react with 1 mole of HI.**
8	**Calculate the percentage efficiency of packing in case of face centred cubic crystal.**
9	**EXPLAIN WILLIAMSON SYNTHESIS OF PREPARING ETHER.**
10	**Define metamerism. Give one example.**
11	In the reaction. Ethanol $\xrightarrow{PCl^5}$ X $\xrightarrow{alc.KOH}$ Y. Identify 'X' and 'Y'.
12	**COMPLETE THE REACTION:** 2 - Methyl propene $\xrightarrow{H_2SO_4/H_2O}$?
13	**DESCRIBE THE STRUCTURE OF DIBORANE**
14	

	Show that in case of first order reaction, the time required for 99.9% completion is nearly ten times the time required for half completion of the reaction. *{repeated}*
15	**WRITE KOLBE'S REACTION.**
16	**DEFINE AVERAGE RATE AND INSTANTANEOUS RATE.**
17	**Distinguish between order of a reaction and molecularity of a reaction.**
18	Atom 'X' is present at the corners of the cube and atom 'Y' is at the centre of the cube in bcc crystalline structure. What is the formula of the compound?
19	**Show that for a first order reaction half life is independent of initial concentration.**
20	Sodium metal crystallizes in bcc structure with the edge length of the unit cell 4.3×10^{-8} cm. Calculate the radius of sodium atom.
21	**HOW IS PHENOL PREPARED FROM:** **1)CHLORO BENZENE 2)ISOPROPYL BENZENE**
22	Calculate the number of atoms in a FCC unit cell.
23	calculate the percentage efficiency of packing in case of Face centered cubic Crystal
24	23. Barium has a body centered cubic unit cell with a length of 508pm along an edge. What is the density of barium.
25	How will you prepare butan-2-ol from Grignard reagent?

QUARTERLY

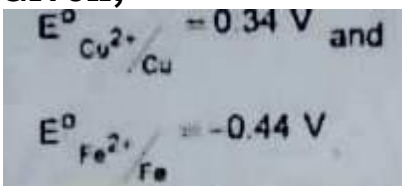
1	Identify the conjugate acid base pair for the following reaction in aqueous solution. i) $NH_4^+ + CO_3^{2-} \leftrightharpoons NH_3 + HCO_3^-$ ii) $HC_2O_4^- + PO_4^{3-} \leftrightharpoons HPO_4^{2-} + C_2O_4^{2-}$
2	What happens when Ammonia react with following compounds? a) Acealdehyde b) Bezaldehyde
3	Write the expression for the solubility product of $Ca_3(PO_4)_2$. *{repeated}*
4	Write IUPAC name for the following structure. i) $CH_2 = CH - CH_2 - OH$ ii) 
5	$CH_3CN \xrightarrow{Na/C_2H_5OH} A \xrightarrow{HNO_2} B$. Identify A and B.
6	Calculate the molar solubility of $1M\ AgNO_3$ solution if the KSP of $AgCl$ is $1.8 X 10^{-10}$.
7	**IDENTIFY THE ORDER OF THE FOLLOWING REACTIONS** **1)RUSTING OF IRON** **2)RADIOACTIVE DISINTEGRATION OF $_{92}U^{238}$.** **3)ACID HYDROLYSIS OF AN ESTER** 4) c) $2A + 3B \rightarrow$ product, Rate = $k(A)^{1/2}(B)^2$. *{repeated}*
8	Compound (A) with a molecular formula C_3H_6O reacts with Cl_2 in the presence of a catalyst gives (B) and without catalyst gives (C). Find (A) (B) & (C).

9	Arrange the following compounds in the increasing order of the property indicated against each. (i) CH_3CH_2OH, CF_3CH_2OH, CCl_3CH_2OH (Acidic nature). (ii) Propanol, Propane, Propanal (Boiling point). (iii) Formic acid, Propanoic acid, acetic acid (Acidity). *{repeated}*
10	**PHENOL IS DISTILLED WITH Zn dust followed by friedel-crafts alkylation with propyl chloride to give a compound (A), (A) on oxidation gives (B). identify A and B.**
11	From the following reaction, identify A and B. 
12	Calculate the number of unpaired electrons in Ti^{3+}, Mn^{2+} and calculate the spin only magnetic moment?
13	Arrange the following in the increasing order of their property indicated. a) Benzoic acid, phenol, picric acid, silicic acid (Pka) b) Ethanol, ethanoic acid, benzoic acid (boiling point)
14	**A hydride of 2nd period metal (A) on reaction with compound of boron (B) to give a reducing agent (C). Identify A,B,C.**
15	Complete the following:- a) $C_6H_5OCH_3 + HI \rightarrow ?$ b) $C_2H_5\text{-}O\text{-}CH_3 + HI \rightarrow ?$.
16	Write IUPAC name for a) C_6H_5CHO b) $CH_3 - \underset{OH}{CH} - CH_3$
17	Calculate the pH of 0.4M HNO_3 solution [Log 4 = 0.6021]

18	Show that in case of 1st order reaction, the time required for 99.9% completion is nearly ten times the time required for half completion of the reaction. *{repeated}*
19	**Explain – why atomic radius of zinc is greater than copper.**
20	Write IUPAC name for the following structure. i) $CH_2 = CH - CH_2 - OH$ ii) 
21	**Write the expression for the solubility product of Hg_2Cl_2.**
22	**Which is more stable Fe^{2+}(or) Fe^{3+} ? Explain.**
23	K_b for NH_4OH is 1.8×10^{-5}. Calculate the percentage of ionisation of 0.06M. ammonium hydroxide solution.
24	Identify A, B and C. 
25	Phenol is treated with 20% nitric acid at room temperature gives a mixture of compound A and B. In these compound A and B, the compound B is more soluble in water than compound A why? Identify the compound A and B.
26	Establish a relationship between the solubility product and molar solubility for the following a) Ag_2CrO_4 b) $Ca_3(PO_4)_2$ *{repeated}*
27	 Find A, B, C.

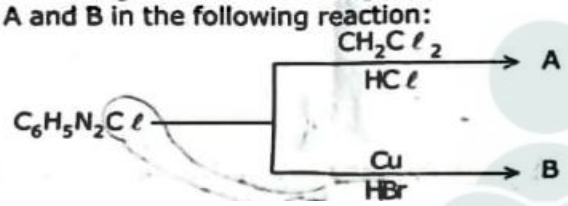
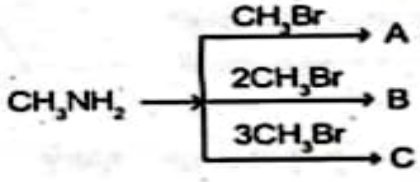
SECOND MID TERM

1	A conductivity cell has two platinum electrodes separated by a distance 1.5 cm and the cross sectional area of each electrode is 4.5 sq cm. using this cell, the resistance of 0.5N electrolytic solution was measured as 15Ω. Find the specific conductance of the solution.
2	A solution of silver nitrate is electrolysed for 20 minutes with a current of 2 amperes. Calculate the mass of silver deposited at the cathode. *{repeated}*
3	**Nitrobenzene does not undergo Friedel-Crafts reaction- Give reason.**
4	**What is Chloropicrin? How is it prepared?**
5	In the complex $[Pt(NH_3)_3(NO_2)]Cl$ identify the following a) Central metal atom/ion b) Ligands c) Coordination number d) IUPAC name
6	**Calculate pH of 0.1M CH_3COOH solution Ka for acetic acid is 1.8×10^{-5}**
7	**What is buffer index ?**
8	**Write any two electrophilic substitution reactions of nitro benzene.**
9	Calculate the standard emf of the $Cd|Cd^{2+}||Cu^{2+}|Cu$ and determine the cell reaction. The standard reduction potentials of $Cu^{2+}|Cu$ and $Cd^{2+}|Cd$ are 0.34V, and -0.40volts reproductively. Predict the feasibility of the cell reaction.
10	For the $[CoF_6]^{3-}$ ion the mean pairing energy is found to be 21000 cm^{-1}. The magnitude of Δ_0 is 13000cm^{-1}. Calculate the crystal field stablisation energy (CFSE) for this complex ion corresponding to low spin and high spin states.
11	Complete the following chemical reaction. i) $C_6H_5NO_2 \xrightarrow[4(H)]{Zn/NH_4OH} ?$ ii) $CH_3NO_2 + 3Cl_2 \xrightarrow{NaOH} ?$ iii) $2C_6H_5NH_2 + CS_2 \xrightarrow{\Delta} A \xrightarrow[\Delta]{Conc.\ HCl} B$

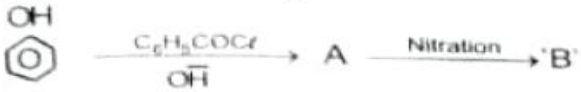
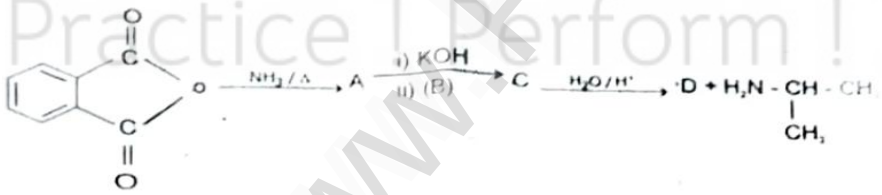
12	**Addition of Alum purifies water. Why?**
13	. $[CO(NH_3)_4Cl_2]Cl$ – write down the following termsfor the above complex. (i) IUPAC name (ii) Oxidation number of central metal ion (iii) Ligands and its types
14	**Is it possible to store copper sulphate in an iron vessel for a long time? Given,** 
15	**What is the major product obtained when 2,3-dimethyl pentan-3-ol is heated in the presence of H_2SO_4 ?**
16	**Write the expression for the solubility product of Hg_2Cl_2.**
17	**Write about lithium-ion battery**

HALF YEARLY

1	**Distinguish nitro and aciforms.**
2	$C_6H_5OH \xrightarrow{Zn\ dust} A \xrightarrow[anhydrous\ AlCl_3]{CH_3Cl} B \xrightarrow{Na} C$. A,B,C. Identify and name it.
3	**Write short notes on Gomberg reaction ?*{repeated}***
4	Can Fe3+ oxidises Bromide to bromine under standar conditions? Given $E^\circ Fe^{3+}|Fe^{2+} = 0.771V$ Eo $Br_2|Br^- = 1.09$ V. Calculate the electro chemical equivalent of silver in silver nitrate
5	Identify A, B and C Ettanoic acid $\xrightarrow{SoCl_2}$ A $\xrightarrow{Pd / BaSO_4}$ B $\xrightarrow{NaOH}$ C
6	Why is AC current used instead of DC in measuring the electrolytic conduction?

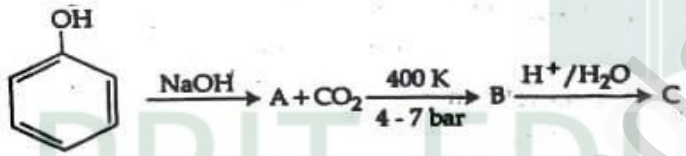
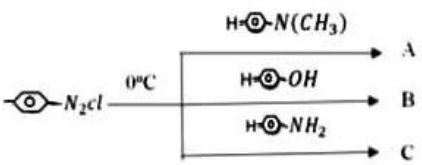
7	Write the two isoners with the formula CH_3NO_2 How will you distinguish between them?
8	Calculate the extent of hydrolysis and the pH of 0.1 M ammonium acetate. Given that $K_a = K_b = 1.8 \times 10^{-5}$.
9	A copper electrode is dipped in 0.1m Copper Sulphate solution at 25°C. Calculate the electrode potential of copper. [Given : $E°Cu^{2+}/Cu = 0.34V$].
10	**Write short notes on transesterification reaction.**
11	Identify A and B in the following reaction: 
12	Write the structure of α - D (+) glucophyranose. *{repeated}*
13	Give IUPAC names for the following compounds. i) Hexamethylenediamine ii) Crotonaldehyde iii) Ethyl methyl isopropylamine iv) Adipic acid
14	Calculate the the pH of 0.1M CH_3COOH solution. Dissociation constant of acetic acid is 1.8×10^{-4}
15	The rate constant for a first order reaction is $1.54 \times 10^{-3}\ s^{-1}$. Calculate its half life time. *{repeated}*
16	Identify A, B and C 

17	$CH_3COCl + H_2 \xrightarrow[BaSO_4]{Pd} A \xrightarrow{NaOH} B \xrightarrow{\Delta} C$. Identify A,B and C.
18	Consider the oxidation of nitric oxide to form NO_2. $2NO_{(g)} + O_{2(g)} \rightarrow 2NO_{2(g)}$ At a particular instant, when $[O_2]$ is decreasing at 0.2 mol $L^{-1}S^{-1}$ at what rate is $[NO_2]$ increasing at that instant?
19	Find out the compounds A, B and C $CH_3CONH_2 \xrightarrow{NaOH/Br_2} A \xrightarrow{NaNO_2/HCl} B \xrightarrow[(ii)\ NH_3]{(i)\ (O)/mild} C$
20	**Distinguish between antiseptics and disinfectants.**
	HALF YEARLY 2023
1	From the following reaction, identify A and B $C_6H_5NO_2 \xrightarrow[6[H]]{Sn/HCl} A$ $C_6H_5NO_2 \xrightarrow[4[H]]{Zn/NH_4Cl} B$
2	Show that in case of first order reaction the time required for 99.9% completion is nearly ten times the time required for half completion of the reaction. **[repeated]**
3	Identify A and B Ethanoic acid $\xrightarrow{SoCl_2}$ (A) $\xrightarrow{Pd/BaSO_4}$ (B)
4	Calculate the pH of 1.5×10^{-3} M solution of $Ba(OH)_2$?

5	An element has bcc structure with a cell edge of 288 pm. The density of the element is 7.2 gcm^{-3}. How many atoms are present in 208 g of the element
6	Complete the following. i)  ii) $C_2H_5COOH \xrightarrow{SOCl_2}$ 'A' $\xrightarrow{Pd/BaSO_4}$ 'B' $\xrightarrow{NaOH}$ 'C' $\xrightarrow{\Delta}$ 'D'
7	Calculate pH of 0.04M HNO_3 solution.
8	The conductivity of a 0.01M solution of a 1:1 weak electrolyte at 298K is 1.5×10^{-4} S cm^{-1}. i) molar conductivity of the solution. ii) degree of dissociation of the solution. Given that $\lambda^0_{cation} = 248.2$ S cm^2 mol^{-1}. and $\lambda^0_{anion} = 248.2$ S cm^2 mol^{-1}
9	The rate constant for a first order reaction is 1.54 x 10^-3 S^-1, Calculate its half life time.
10	33. Predict A, B, C and D for the following reaction 
11	Write the (i) IUPAC name & (ii) Co-ordination number for the following compound. $[Co(CO_3)(NH_3)_4]Cl$
12	Identify compounds A,B & C in the following sequence of reactions. $C_6H_5NO_2 \xrightarrow{Fe/HCl} A \xrightarrow[273k]{HNO_2} B \xrightarrow{C_6H_5OH} C$

REVISION-1&2

1	A solution of silver nitrate is electrolysed for 20 min with a current of 2 amperes. Calculate the mass of silver deposited at the cathode.
2	Show that in case of first order reaction, the time required for 99.9% completion is nearly ten times the time required for half completion of the reaction.
3	Identify A and B. Ethanoic acid $\xrightarrow{SOCl_2}$ A $\xrightarrow[BaSO_4]{Pd/}$ B
4	Ionic conductance at infinite dilution of Al^{3+} and SO_4^{2-} are 189 and 160 mho cm^2 equiv^{-1}. Calculate the equivalent and molar conductance of the electrolyte $Al_2(SO_4)_3$ at infinite dilution.
5	Identify A and B : $A \xrightarrow[4[H]]{Na(Hg)/C_2H_5OH} CH_3 - CH_2 - NH_2$ $B \xrightarrow[4[H]]{Na(Hg)/C_2H_5OH} CH_3 - NH - CH_3$
6	**Differentiate primary, secondary and tertiary alcohols using Lucas test.**
7	**Draw the structure of zwitter ion.**
8	Account for the following Ethylamine is soluble in water whereas aniline is not
9	**CONVERT ETHENE TO ETHANE-1,2 di-ol.**
10	**Calculate the pH OF 0.04M HNO_3 SOLUTION ?**
11	**How will you get P-hydroxy azo benzene fro phenol ?**
12	Identify A , B , C and D ? ethanoic acid $\xrightarrow{SOCl_2}$ A $\xrightarrow{Pd/BaSO_4}$ B $\xrightarrow{NaOH}$ C $\xrightarrow{\Delta}$ D

13	In the reaction $C_2H_5OH \xrightarrow{PCl_5} X \xrightarrow{alc\ KOH} Y$ find X and Y
14	Identify A, B and C $CH_3COOH \xrightarrow{SOCl_2} A \xrightarrow{Pd/BaSO_4} B \xrightarrow{NaOH} C$
15	**Aniline does not undergo friedal-craft reaction. Why ?**
16	A first order reaction is 40% complete in 50 minutes. Calculate the value of the rate constant. In what time will the reaction be 80% complete?
17	**How will you prepare malachite green ?**
18	**Ksp pf AgCl is 1.8 x 10^{-10}. Calculate molar solubility in 1 M $AgNo_3$.**
19	**ZnO is colourless at room temperature, but it turns yellow color on heating, why ?**
20	Find A, B and C of the following reaction. 
21	The half life of the homogeneous gaseous reaction $SO_2Cl_2 \rightarrow SO_2Cl_2$ which obeys first order kinetic is 8.0 minutes. How long will it take for the concentration of SO_2Cl_2 to be reduced to 1% of the initial value?
22	Identify the enzyme catalyst in the following reactions: a] Oxidation of ethanol into acetic acid b] Hydrolysis of starch into maltose c] Hydrolysis of urea
23	**What are sugar substituents ? Give examples.**
24	Identify compounds A, B and C 

25	Calculate the molar conductance of 0.001M aqueous KCl solution at 250C. The specific conductance of KCl at 250C is 14.114X10^-2 Sm-1
26	**Calculate the packing fraction in simple cubic unit cell.**
27	**Write SandMeyer's reaction.**
28	**Mention any three characteristics of catalyst ?**
29	Write the IUPAC names of the following : (i) $CH_2=CH-CHO$ (ii) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$ (iii) $HOOC-(CH_2)_2-COOH$ Prop-2-enal Propanone Butanedioic acid PART - IV
30	**What are fat soluble vitamins?**
31	Calculate the concentration of OH^- ion in a fruit juice, which contains 2×10^{-3}M H_3O^+ ion. Identify the nature of the solution.
32	How will you conduct the following changes? a) Acetone → Diacetone amine b) Formaldehyde → Hexamethylene tetramine c) Benzaldehyde → Hydro benzamide
33	**Complete the following reaction:** $CH_3CHO \xrightarrow{NH_2\text{-}OH} A \xrightarrow{P_2O_5} B$
34	An organic compound (A) having molecular formula C_3H_6O is heated with Zinc amalgam and hydrochloric acid produces compound (B) having molecular formula C_3H_8 Identify A and B.
35	An organic compound (A) - $C_3H_8O_3$ used as a sweetening agent, which on oxidation with Fenton's reagent gives a mixture of compounds B and C identify A, B and C Write possible reactions

36	From the following reaction, identify A and B $C_6H_5 - NO_2$ —(Sn / Hcl, 6[H])→ A —(Zn / NH_4Cl, 4[H])→ B
37	A solution of silver nitrate is electrolysed for 20 minutes which a current of 2 amperess. Calculate the mass of silver deposited at the cathode.
38	**Define equivalent conductance.**
39	An organic compound (A) C_3H_9N when treated with nitrous acid, gave an alcohol (B) and N_2 gas. (A) undergoes carbylamine reaction to give (C) which on reduction gave isopropyl methylamine. Identify the compound (A), (B), (C) and write the equations.
40	K_{sp} of AgCl is 1.8×10^{-10}. Calculate molar solubility in 1M $AgNO_3$.
41	Identify the conjugate acid base pair for the following reaction in aqueous solution. i) $HS^-_{(aq)} + HF \rightleftharpoons F^-_{(aq)} + H_2S_{(aq)}$. ii) $HPO_4^{2-} + SO_3^{2-} \rightleftharpoons PO_4^{3-} + HSO_3^-$.
42	i) Arrange the following in the increasing order of their reactivity. CH_3CONH_2, CH_3COCl, $(CH_3CO)_2O$ and $CH_3COOCH_2CH_3$ ii) Arrange the following in the decreasing order of their acidity. CH_3OH, C_2H_2, CH_3COOH, H_2O and C_6H_5OH.
43	Draw the structure of trimethylamine and mention the following. i) Hybridisation of 'N' atom ii) C-N-C bond angle and C-N bond length
44	A copper electrode is dipped in 0.1M copper sulphate solution at 25°C. Calculate the electrode potential of copper. (Given:- $E^0_{Cu^{2+}/Cu} = 0.34V$]
45	**A first order reactin is 40% complete in 50 minutes.calculate the value of the rate constant.in wat time will the reaction 80% complete?**

46	**How will you prepare the following rubbers ? a) buna-N b)buna-s**
47	The activation energy of a reaction is 225K cal mol^{-1} and the value of rate constant at 40°C is 1.8×10^{-5} s^{-1}. Calculate the frequency factor 'A'.
48	**What are sugar substituents ? Give examples.**
49	A copper electrode is dipped in 0.1M copper sulphate solution at 25°C. Calculate the electrode potential of copper. (Given:- $E^{\circ}_{Cu^{2+}/Cu} = 0.34V$)
50	Give IUPAC names for the following compounds. i. $CH_2=CHCH_2NH_2$ ii. CH_3-NH-$CH(CH_3)_2$
51	**Ionic conductance at infinite dilution of Al^{3+} and SO_4^{2-} are 189 and 180 mho cm^3 $equiv^{-1}$. Calculate the equivalent and molar coductance of the electrolyte $Al_2(SO_4)_3$.**
52	**Write the Zwitter ion structure of alanine.**
53	**Differentiate physorption and chemisorption.**
54	The Ka value for HCN is 10^{-9}. What is the pH of 0.4M HCN solution?
55	**How is chloropicrin prepared ?**
56	There is only a marginal differences in decrease in ionisation enthalpy from aluminium to thallium - Explain. Why?
57	**Calculate the no. of atoms present per unit cell in FCC.**
58	Identify, compounds A, B and C. $C_6H_5NO_2 \xrightarrow{Fe/HCl} A \xrightarrow{HNO_2} B \xrightarrow{C_6H_5OH} C$
59	An aromatic simplest nitro compound A on reduction using Sn/HCl gives B. B undergoes carbylamine reaction . Identify A and B.
60	Write the expression for the solubility product of $Ca_3(PO_4)_2$ and Hg_2Cl_2

REVISION - 2024

1	A Copper electrode is dipped in 0.1 M copper sulphate Solution at 25°C. Calculate the electrode potential of copper (Given: $E^{\circ}_{Cu^{2+}/Cu} = 0.34$ V)
2	An organic compound (A) – $C_3H_8O_3$ used as a sweetening agent,which on oxidation with Fenton's reagent gives a mixture of compounds B and C. Identify A, B and C. Write possible reactions.
3	Identify A and B Ethanoic acid $\xrightarrow{SOCl_2}$ A $\xrightarrow{Pd/BaSO_4}$ B
4	Ionic conductance at infinite dilution of Al^{3+} and SO_4^{2-} are 189 and 160 mho cm^2 $equiv^{-1}$. Calculate the equivalent and molar conductance of the electrolyte $Al_2(SO_4)_3$ at infinite dilution.
5	Write the following for the complex $[Ag(NH_3)_2]^+$. (a) Central metal ion (ii) IUPAC name
6	33) Identify A, B and C. $CH_3COOH \xrightarrow{SOCl_2} A \xrightarrow{Pd/BaSO_4} B \xrightarrow{NaOH} C$
7	24. Identify the compounds A and B in the following sequence of reactions $C_6H_5NO_2 \xrightarrow{Sn/HCl} A \xrightarrow[\text{பிரிமத்தை}]{C_6H_5-\overset{\overset{O}{\|}}{C}-Cl} B$

8	Ionic conductance at infinite dilution of Al^{3+} and SO_4^{2-} are 189 and 160 mho cm^2 $equiv^{-1}$. Calculate the equivalent and molar conductance of the electrolyte $Al_2(SO_4)_3$ at infinite dilution.
9	A Solution of 0.10 m of a weak electrolyte is found to be disassociated to the extent of 1.20% at 25° C. find the disassociation constant of the acid.
10	Compound 'A' of M.F C_2H_3N reduced by Na-Hg/C_2H_5OH to give 'B' of M.F C_2H_7N. Compound 'B' reacts with HNO_2 to give 'C' 'C' gives red colour in Victor Meyor test. Identify A, B & C.
11	Identify A,B and C : $CH_4 \xrightarrow{HNO_3} A \xrightarrow{LiAlH_4} B \xrightarrow{2CH_3CH_2Br} C$
12	Calculate the molar conductance of 0 01 M aqueous KCl solution at 25°C The specific conductance of KCl at 25°C is 14 114 x 10^{-3} Sm^{-1}?
13	Identify A, B and C $C_6H_5NO_2 \xrightarrow{Fe/HCl} (A) \xrightarrow{HNO_2/273K} (B) \xrightarrow{C_6H_5OH} (C)$
14	Identify A, B, C and D in the following reaction. $CH_3CH_2COOH \xrightarrow{LiAlH_4} A \xrightarrow{PCl_5} B \xrightarrow{Alc.KOH} C \xrightarrow{HI/Peroxide} D$
15	Complete the following reactions. i) $P_4 + NaOH + H_2O \rightarrow$ ii) $XeF_6 + H_2O \rightarrow$ iii) $Cu + Conc.H_2SO_4 \rightarrow$
16	24) Complete the reaction $P_4 + NaOH + H_2O \rightarrow$
17	Aluminium Crystalizes in cubic close packed structure. Its metallic radius is 125 pm. Calculate the Edge length of the unit cell.

18	The rate constant for a first order reaction is $1.54 \times 10^{-4}\ S^{-1}$. Calculate the half life time.
19	Identify A and B A $\xrightarrow[4\,[H]]{Na\,(Hg)/C_2H_5OH}$ $CH_3CH_2NH_2$ B $\xrightarrow[4\,[H]]{Ng\,(Hg)/C_2H_5OH}$ CH_3NHCH_3
20	Rate constant of first order reactions $1.54 \times 10^{-3}\ S^{-1}$ Find the value of half life period.
21	Write the following for the complex $[Ag(NH_3)_2]^+$ a) Ligand b) central metalion c) IUPAC Name
22	Find the pH of a buffer solution containing 0.2 mol/lit sodium acetate and 0.18 mol/lit acetic acid? (The PKa value is 4.74)
23	Find out A, B and C in the following reaction $C_6H_5N_2Cl \xrightarrow{CuCN} A \xrightarrow{H_2O/H^+} B \xrightarrow{NH_3} C$
24	The reaction $Zn_{(s)} + Co^{2+} \rightleftharpoons Co_{(s)} + Zn^{2+}$ occurs in a cell. Compute the standard emf of the cell. Given that $E^\circ_{Zn\|Zn^{2+}} = 0.76\ V$ $E^\circ_{Co\|Co^{2+}} = 0.28V$.
25	A first order reaction is 40% complete in 50 minutes. Calculate the value of the rate constant. In what time will the reaction be 80% complete? PART - IV

26	Benzoic acid $\xrightarrow{PCl_5} A \xrightarrow[anhydrous\ AlCl_3]{PCl_5} B$ identify A and B.
27	 A, $\xrightarrow{SOCl_2} A \xrightarrow{NH_3} B \xrightarrow{LiAlH_4} C$ B Identify A, B and C.
28	$C_6H_5CHO + HCHO \xrightarrow{50\%\ NaOH} A + B$ Identify A and B
29	Calculate the PH of 0.1 mol of NH_4OH solution dissociation constant of NH_4OH 1.8×10^{-5}
30	24. Calculate the molar conductance of 0.01M aqueous KCl solution at 25°C the specific conductance of KCl at 25°C is $14.114 \times 10^{-2} Sm^{-1}$
31	Identify compounds A,B, in the following sequence of reactions. $CH_3 - CH_2Br + AgCN \xrightarrow{C_2H_5OH} A \xrightarrow[[H]]{Na(Hg)/C_2H_5OH} B$
32	Calcualte the pH of the buffer solution containing 0.20 mole per litre sodium acetate and 0.18 mole per litre acetic acid. Ka for acetic is 1.8×10^{-5} [Given log 1.8 = 0.26, log 9=9.5]
33	Convert Glycol ____, formaldehyde.
34	An atom crystallizes in fcc crystal lattice and has a density of $10 gcm^{-3}$ with unit cell edge length of 100pm. Calculate the number of atoms present in 1g of crystal.

35	Calculate the molar conductance of 0.01 M aqueous KCl solution at 25°C. The specific conductance of KCl at 25°C is 14.114×10^{-2} Sm^{-1}?
36	Identify A, B and C $C_6H_5NO_2 \xrightarrow{Fe/HCl} (A) \xrightarrow{HNO_2/273K} (B) \xrightarrow{C_6H_5OH} (C)$
37	Sodium metal crystallise in BCC structure with the edge length of the unit cell is 4.3×10^{-8} cm. Calculate the radius of sodium metal atom
38	Acetic acid $\xrightarrow{PCl_5}$ A $\xrightarrow{Pd/BaSO_4}$ B $\xrightarrow{CH_3MgBr/H_3O^+}$ C. Identify A, B and C
39	How will you prepare acetylchloride from Acetic acid?
40	Calculate the p^H of 0.04M HNO_3 solution. [log4=0.6021]
41	Calculate the Magnetic moment and magnetic property of $[Fe(CN)_6]^{3-}$
42	The conductivity of a 0.01M solution of a 1 :1 weak electrolyte at 298K is 1.5×10^{-4} S cm $^{-1}$ Calculate molar conductivity of the solution
43	i) $nCH_2 = CH_2 \xrightarrow[1000\ atm]{200^0 - 300^0 C} ?$ ii) $nCF_2 = CF_2 \xrightarrow{\Delta} ?$
44	Write the a) ligand b) CMI c) IUPAC name of $[Co(NH_3)_6]^{3+}$

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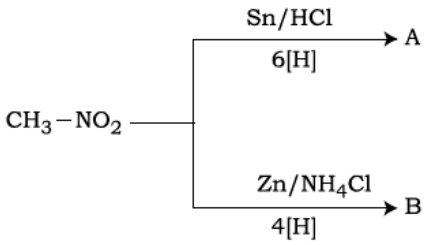
1	50ml of 0.05M HNO_3 is added to 50ml of 0.025M KOH. Calculate the pH of the resultant solution.
2	Identify A to C in the following sequence? $C_6H_5NO_2 \xrightarrow[HCl]{Fel} A \xrightarrow[273K]{HNO_2} B \xrightarrow[\Delta]{H_2O} C$
3	Give the schematic representation of proper and improper alignment of reactant for a general reaction $A_2+B_2 \rightarrow 2AB$.
4	Write the IUPAC names of the following coordination compounds. (i) $Na_2[Ni(EDTA)]$ (ii) $[Co(en)_3]_2(SO_4)_3$ (iii) $[Pt(NH_3)_2Cl.NO_2]$
5	Why is C–O–C bond angle in ether slightly greater than the tetrahedral bond angle ?
6	There is only a marginal difference in decrease in ionisation enthalpy from Aluminium to Thallium - Explain why ?
7	***Write a note on denaturation of proteins.***
8	A solution of silver nitrate is electrolysed for 30 minutes with a current of 2 amperes. Calculate the mass of silver deposited at the cathode.
9	

From the following reaction, identify A and B.



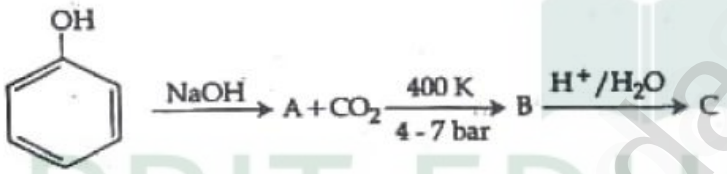
10 Classify the following into covalent, molecular, ionic and metallic solids.

(i) Diamond (ii) Brass (iii) NaCl

(iv) Naphthalene (v) Glucose (vi) SiO_2

11 **ZnO is colorless at room temperature, but it turns yellow color on heating, why?**

12 Find A, B and C of the following reaction.



13 **Write a note on HVZ reaction.**

14 **Calculate the pH and pOH of 0.001 M HCl solution.**

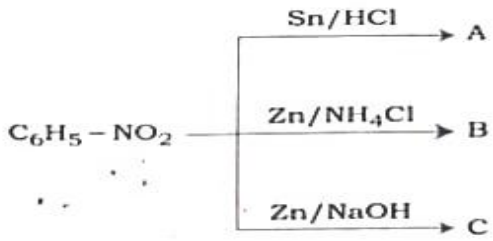
15 Identify A and B in the following sequence of reactions.

$CH_3 - Br \xrightarrow{NaN_3} A \xrightarrow{LiAlH_4} B + N_2$

16 Write the following for the complex $[Ag(NH_3)_2]^+$.

(a) Ligand (b) Central metal ion (c) IUPAC name

17 A solution of silver nitrate is electrolysed for 20 minutes with a current of 2 amperes. Calculate the mass of silver deposited at the cathode.

18	Identify compounds A, B and C for the following. 
19	Identify the compounds A and B in the following sequence of reactions. $CH_3CH_2NO_2 \xrightarrow{Sn/HCl} A \xrightarrow{CH_3COCl} B$
20	***Show that in case of first order reaction the time required for the completion of 99% is twice the time required for the completion of 90% of the reaction.***
21	***Calculate the concentration of OH^- ion in a fruit juice which contains 2 x 10^{-3} M, H_3O^+ ion. Identify the nature of the solution.***
22	Identify compounds A, B and C in the following sequence of reactions $C_6H_5NO_2 \xrightarrow{Sn/HCl} A \xrightarrow[273K]{NaNO_2+HCl} B \xrightarrow{C_6H_5OH} C$
23	A hydride of 2nd period alkali metal (X) on reaction with compound of Boron (Y) to give a reducing agent (Z). Identify X, Y and Z.
24	**Explain the mechanism of Cannizaro reaction ?**
25	The reaction $Zn(s) + Co^{2+} \rightleftharpoons Co(s) + Zn^{2+}$ occurs in a cell. Compute the standard emf of the cell. Given that $E^0_{Zn/Zn^{2+}} = +0.76V$ and $E^0_{Co/Co^{2+}} = +0.28V$
26	Derive Arhenius equation to calculate activation energy from the rate constant k_1 and k_2 at temperature T_1 and T_2 respectively.
27	

	Complete the reaction $P_4 + NaOH + H_2O \longrightarrow$
28	An organic compound (A) - $C_3H_8O_3$ used as a sweetening agent, which on oxidation with Fenton's reagent gives a mixture of compounds B and C. Identify A, B & C. Write Possible reactions
29	**What are food preservatives?**
30	An Organic compound (A) – CNCl react with methyl magnesium Bromide to give compound B – (C_2H_3N). B-upon catalytic reduction to give compound C – (CH_5N). C gives carbylamine test. Identify compound A, B and C and write the reactions.
31	The equivalent conductance of M/36 solution of a Weak monobasic acid is 6 mho cm^2 $equiv^{-1}$ and at infinite dilution is 400mho cm^2 $equiv^{-1}$. Calculate the dissociation constant of this acid
32	An organic Compound C_3H_5Br (A) on treatment with Mg in dry ether gives (B) which on treatment with CO_2 followed by acidification gives (C). Identify (A), (B) & (C) and write possible equations.
33	The rate constant for a first order reaction is 1.54×10^{-3} S^{-1}. Calculate its half life time.
34	Identify Compounds A, B and C in the following sequence of reaction. $CH_3CH_2NC \xrightarrow{HgO} A \xrightarrow{H_2O} B \xrightarrow[H_2O]{NaNO_2/HCl} C$

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