RAVI MATHS TUITION CENTER ,GKM COLONY, CHENNAI- 82. PH: 8056206308

12TH CHEMISTRY MODEL PAPER 1

12th Standard
Chemistry

Reg.No. : | | | | | | |

Instructions : (1) check the question paper for fairness of printing. if there is any lack of fairness, inform the hall supervisor immediately.(2) use blue or black ink to write and underline and pencil to draw diagrams.

Exam Time : 03:00:00 Hrs | Total Marks : 70

PART I | 15 x 1 = 15

ANSWER ALL THE QUESTIONS.

1) Roasting of sulphide ore gives the gas (A).(A) is a colourless gas. Aqueous solution of (A) is acidic. The gas (A) is
(a) CO_2 (b) So_3 (c) SO_2 (d) H_2S

2) Which of the following metals has the largest abundance in the earth's crust?
(a) Aluminium (b) calcium (c) Magnesium (d) sodium

3) Which is true regarding nitrogen?
(a) least electronegative element (b) has low ionisation enthalpy than oxygen (c) d- orbitals available (d) ability to form pπ-pπ bonds with itself

4) Which of the following d block element has half filled penultimate d sub shell as well as half filled valence sub shell?
(a) Cr (b) Pd (c) Pt (d) none of these

5) An excess of silver nitrate is added to 100ml of a 0.01M solution of pentaaquachloridochromium(III)chloride. The number of moles of AgCl precipitated would be
(a) 0.02 (b) 0.002 (c) 0.01 (d) 0.2

6) An ionic compound AxBy crystallizes in fcc type crystal structure with B ions at the centre of each face and A ion occupying entre of the cube. the correct formula of AxBy is
(a) AB (b) AB_3 (c) A_3B (d) A_8B_6

7) A zero order reaction X ⟶ XProduct, with an initial concentration 0.02M has a half life of 10 min. if one starts with concentration 0.04M, then the half life is
(a) 10 s (b) 5 min (c) 20 min (d) cannot be predicted using the given information

8) Concentration of the Ag^+ ions in a saturated solution of $Ag_2C_2O_4$ is 2.24×10^{-4}mol L^{-1} solubility product of $Ag_2C_2O_4$ is
(a) $2.42 \times 10^{-8}mol^3L^{-3}$ (b) $2.66 \times 10^{-12}mol^3L^{-3}$ (c) $4.5 \times 10^{-11}mol^3L^{-3}$ (d) $5.619 \times 10^{-12}mol^3L^{-3}$

9) The number of electrons that have a total charge of 9650 coulombs is
(a) 6.22×10^{23} (b) 6.022×10^{24} (c) 6.022×10^{22} (d) 6.022×10^{-34}

10) For freudlich isotherm a graph of log $\frac{x}{m}$ is plotted against log P. The slope of the line and its y – axis intercept respectively corresponds to
(a) $\frac{1}{n}$,K (b) log$\frac{1}{n}$,K (c) $\frac{1}{n}$,logK (d) log $\frac{1}{n}$,log K

11) Which of the following compounds on reaction with methyl magnesium bromide will give tertiary alcohol.
(a) benzaldehyde (b) propanoic acid (c) methyl propanoate (d) acetaldehyde

12) The formation of cyanohydrin from acetone is an example of
(a) nucleophilic substitution (b) electrophilic substitution (c) electrophilic addition (d) Nucleophilic addition

13) The method by which aniline cannot be prepared is
(a) degradation of benzamide with Br_2 / NaOH (b) potassium salt of phthalimide treated with chlorobenzene followed by hydrolysis with aqueous NaOH solution. (c) Hydrolysis of phenylcyanide with acidic solution (d) reduction of nitrobenzene by Sn / HCl

14) Which one of the following rotates the plane polarized light towards left?
(a) D(+) Glucose (b) L(+) Glucose (c) D(-) Fructose (d) D(+) Galactose

15) Which of the following is an analgesic?
(a) Streptomycin (b) Chloromycetin (c) Asprin (d) Penicillin

PART II 6 x 2 = 12

ANSWER ANY SIX QUESTIONS AND QUESTION NUMBER 24 IS COMPULSORY.

16) What is the difference between minerals and ores?

17) Give the uses of Borax

18) Explain why fluorine always exhibit an oxidation state of -1?

19) Justify the position of lanthanides and actinides in the periodic table.

20) Ni^{2+} is identified using alcoholic solution of dimethyl glyoxime. Write the structural formula for the rosy red precipitate of a complex formed in the reaction.

21) Explain briefly seven types of unit cell

22) The rate of the reaction X+2y→ product is $4x10^{-3}$ mol $L^{-1}S^{-1}$, if [X]=[Y]=0.2M and rate constant at 400K is $2x10^{-2}s^{-1}$, What is the overall order of the reaction

23) Calculate the pH of 0.04 M HNO_3 Solution.

24) The mechanism of Fridel crafts reaction is given below

$$C_6H_5 + CH_3Cl \xrightarrow[\text{anhydrous}]{Alcl_3} C_6H_5CH_3 + HCl$$

PART III 6 x 3 = 18

ANSWER ANY SIX QUESTIONS AND QUESTION NUMBER 33 IS COMPULSORY.

25) Write the molecular formula and structural formula for the following molecules.
a) Nitric acid
b) dinitrogen pentoxide
c) phosphoric acid
d) phosphine

26) Explain why Cr^{2+} is strongly reducing while Mn3+ is strongly oxidizing.

27) $[Ni(CN)_4]^{2-}$ is diamagnetic, while $[NiCl_4]^{2-}$ is paramagnetic , explain using crystal field theory.

28) The decomposition of Cl_2O_7 at 500K in the gas phase to Cl_2 and O_2 is a first order reaction. After 1 minute at 500K, the pressure of Cl_2O_7 falls from 0.08 to 0.04 atm. Calculate the rate constant in s^{-1}

29) Derive an expression for the hydrolysis constant and degree of hydrolysis of salt of strong acid and weak base

30) What is the action of HCN on
(i) propanone
(ii) 2,4-dichlorobenzaldehyde.

31) Identify A,B,C and D

$$CH_3\text{-}NO_2 \xrightarrow{L_1AlH_4} A \xrightarrow{2CH_3Ch_2Br} B \xrightarrow{H_2SO_4} C$$

32) What are harmones? Give examples

33) Which sweetening agent are used to prepare sweets for a diabetic patient?

PART IV 5 x 5 = 45

ANSWER ALL THE QUESTIONS

34) a) A double salt which contains fourth period alkali metal (A) on heating at 500K gives (B). aqueous solution of (B) gives white precipitate with $BaCl_2$ and gives a red colour compound with alizarin. Identify A and B.

(OR)

b) Benzene diazonium chloride in aqueous solution decomposes according to the quation $C_6H_5N_2Cl \longrightarrow C_6H_5Cl + N_2$ Starting with an initial concentration of 101 g L^{-1}, the volume of N_2 gas obtained at 50 °C at different intervals of time was found to be as under:

t(min)	6	12	18	24	30	∞
Vol.of N_2 (ml)	19.3	32.6	41.3	46.5	50.4	58.3

Show that the above reaction follows the first order kinetics. What is the value of the rate constant?

35) a) 8.2×10^{12} litres of water is available in a lake. A power reactor using the electrolysis of water in the lake produces electricity at the rate of 2×10^{6} Cs^{-1} at an appropriate voltage.

How many years would it like to completely electrolyse the water in the lake. Assume that there is no loss of water except due to electrolysis.

(OR)

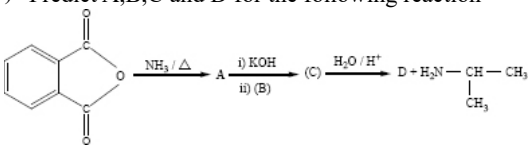
b) Classify the following as linear, branched or cross linked polymers

a) Bakelite

b) Nylon

c) polythene

36) a) Predict A,B,C and D for the following reaction



37) a) predict which of the following will be coloured in aqueous solution Ti^{2+} , V^{3+} Sc^{4+}, Cu^{+} ,Sc^{3+}, Fe^{3+}, Ni^{2+} and Co^{3+}

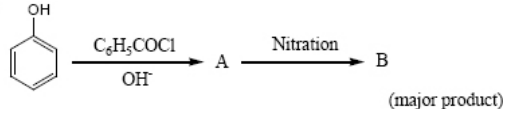
(OR)

b) K_{sp} of $Al(OH)^3$ is 1×10^{-15}M. At what pH does 1.0×10^{-3}M Al^{3+} precipitate on the addition of buffer of NH_4Cl and NH_4OH solution?

38) a) An atom crystallizes in fcc crystal lattice and has a density of 103 gcm^{-3} with unit cell edge length of 100pm. calculate the number of atoms present in 1 g of crystal.

(OR)

b) Complete the following reactions

i) 

ii) $C_6H_5 - CHCH(OH)CH(CH_3)_2 \xrightarrow{Con H_2SO_4}$

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PART I

ANSWER ALL THE QUESTIONS.

1) (c) SO_2
2) (a) Aluminium
3) (d) ability to form pπ-pπ bonds with itself
4) (a) Cr
5) (b) 0.002
6) (b) AB_3
7) (c) 20 min
8) (d) $5.619 \times10^{-12} mol^3L^{-3}$
9) (c) 6.022×10^{22}
10) (c) $\frac{1}{n}$,logK
11) (c) methyl propanoate
12) (d) Nucleophilic addition
13) (b) potassium salt of phthalimide treated with chlorobenzene followed by hydrolysis with aqueous NaOH solution.
14) (c) D(-) Fructose

15)
(c) Asprin

PART II 6 x 2 = 12

ANSWER ANY SIX QUESTIONS AND QUESTION NUMBER 24 IS COMPULSORY.

16)

Minerals	**Ores**
A naturally occurring substance obtained by mining which contain Ithe metal in free state or in the form of compounds.	Ore contains a high percentage of metal, from which it can be extracted conveniently and economically.
All minerals are not ores	All ores are Minerals
It contains a low percentage of metal	It contains a high percentage of metals
Ex:Hematite, Magnetite.	EX:Bauxite,China cla

17)
(i) Borax is used for the identification of coloured metal ions.
(ii) In the manufacture optical and borosilicate I glass, enamels and glazes for pottery. .
(iii) It is also used as a flux in metallurgy and also acts as a preservative.

18)
(i) The electronic configuration of fluorine is I
$1s^2 2S^2 2p/\ 2p/\ 2p/.-$
(ii) To attain the noble gas configuration I it gains one electrons and exhibits -I oxidation state.
(il) Fluorine is most electronegative atom so does not exhibit positive oxidation state.
(iv) Since it cannot expand its octet due to non availability of d- orbitals

19)
(i) The fourteen elements following actinium i.e., from Thorium (Th) to Lawrentium (Lr) are called actinoids.
(ii) Similar to lanthanoids, they are placed at the bottom of the periodic table. Electronic configuration: (Rn) $5f^{2-14}\ 6d^{0-2}\ 7s^2$
Ex: Actinium (Ac)
Thorium (Th)
Uranium (U)

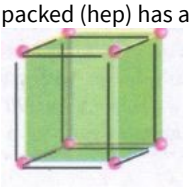
20)
Addition of an alcoholic solution of dimethylglyoxime to an ammoniacal solution of Ni(II) gives rose - red precipitate
$Ni[ONCC\ N\ OH]_2$ Nickel Cis (dimethylglyoximate)

21)
There are seven primitive crystal systems:
Cubic, tetragonal, orthorhombic, hexagonal, monoclinic, triclinic and rhombohedral. They differ in the arrangement of their crystallographic axes and angles.
i) Cubic: The cubic unit cell is the smallest repeating unit when all angles are 90o C and all lengths are equal. As such, each axis is defined by a cartesian coordinate. Each cubic cell has 8 atoms in each corner of the cube, and that atom is share with parameters a=b=c; $\propto=\beta=\gamma=90^o$.

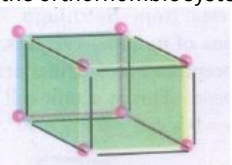
ii) Tetragonal: Tetragonal crystal lattices result from stretching a cubic lattice along one of its lattice vectors, so that the cube becomes a.rectangular prism with a square base. This is a unit cell with parameters a = b-c; ∝=β=ɣ= 90°.

iii) Orthorhombic lattices result from stretching a cubic lattice along two of its orthogonal pairs by two different factors, resulting in a rectangular prism with a rectangular base (a by b) and height (c), such that a, b, and c are distinct. All three bases intersect at 90° angles, so the three lattice vectors remain mutually orthogonal. This is a unit cell with parameters a -b -c; ∝=β=ɣ=90°.

iv) Hexagonal: This is a unit cell with parameters a=b-c; ∝=β=90o, ɣ=120o. The hexagonal closest packed (hep) has a coordination number of 12 and contains 6 atoms per unit cell.

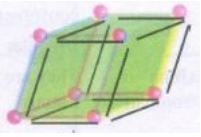


v) Monoclinic: In the monoclinic system, the crystal is described by vectors of unequal lengths, as in the orthorhombic system. They form a rectangular prism unit cell with parameters a -b-c; ∝=ɣ=90^{o},



vi) Triclinic: anorthic crystal system. A crystal system, the crystal is described by vectors of unequal length, as in the orthorhombic system. In addition, the angles between these vectors must all be different and may include 90^{o}. This is a unit cell with parameters a-b-c; ∝-ɣ-90^{o}.
The triclinic lattice is the least symmetric of the 14three-dimensional Bravais lattices. It has (itself) the minimum symmetry all lattices have: points of inversion at each lattice point: at the midpoints of the edges and the faces, and at the center points. It is the only lattice type that itself has no mirror planes.

vii) Rhombohedral: The unit cell is a rhombohedron (which gives the name for the rhombohedral lattice system). This is a unit cell with parameters a=b=c; ∝=β=ɣ-90o. In geometry, a rhombohedron is a three-dimensional figure like a cube, except that its faces are not squares but rhombi. It is a special case of a parallelepiped where all edges are the same length. It can be used to define rhombohedral lattice system, a honeycomb with rhombohedral cells.



22)

Rate=K[X]n[y]m

$4x10^{-3}$ mol $L^{-1}s^{-1}=2x10^{-2}s^{-1}(0.2\text{mol } L^{-1})^{n}(0.2\text{mol } L^{-1})^{n}$

$$\frac{4\times10^{-3}mol\quad L^{-1}s^{-1}}{2\times10^{-2}s^{-1}} = (0.2)^{n+m}(\text{mol } L^{-1})^{n+m}$$

$0.2(\text{mol } L^{-1})=(0.2)^{n+m}(\text{mol } L^{-1})^{n+m}$

Comparing the powers on both sides
The overall order of the reaction n + m = 1

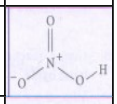
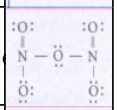
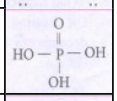
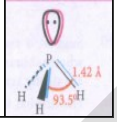
23)
Concentration of HNO_3 = 0.04M
$[H_3O^+]$=0.04 mol dm^{-3}
$pH=-\log[H_3O^+]$
$=-\log(0.04)$
$=-\log(4 \times 10^{-2})$
$=2-\log 4$
$=2-0.6021$
$=1.3979=1.40$

24)
The action of catalyst is explained as follows
$CH_3Cl+AlCl_3 \rightarrow [CH_3]^+[AlCl_4]^-$
It is an intermediate.
$C_6H_6+[CH_3^+][AlCl_4]^- \rightarrow C_6H_5CH_3+AlCl_3+HCl$

PART III 6 x 3 = 18

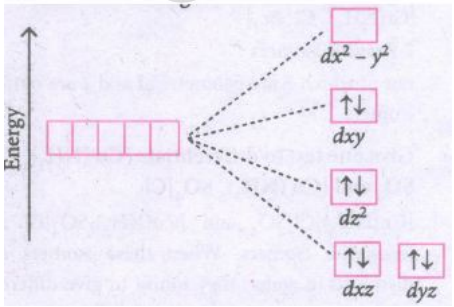
ANSWER ANY SIX QUESTIONS AND QUESTION NUMBER 33 IS COMPULSORY.

25)

	Molecular formula	Structural form
a	Nitric acid $HN0_3$	
b)	dinitrogen pentoxid	
c)	phosphoric acid H_3PO	
d)	phosphine PH_3	

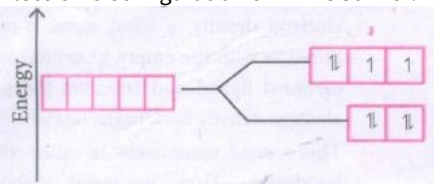
26)
(i) Cr^{2+} is strongly reducing in nature. It has a d4 configuration. While acting as a reducing agent, it gets oxidized to Cr^{3+} (electronic configuration, d^3)
(ii) This d^3 configuration can be written as $3t^{2g}$ configuration, which is a more stable configuration.
(iii) In the case of Mn^{3+} (d^4), it acts as an oxidizing agent and gets reduced to Mn^{2+} (d^5).
(iv) This has an exactly half-filled d-orbital and has an extra-stability.

27)
$[Ni(CN)_4]^{2-}$ is a low spin square planar complex as it contains strong field CN^- ligand in it.
Oxidation state of Ni in complex is +2 Electronic Configuration of Ni^{2+} is $3d^8\ 4s^0$



Crystal field splitting in square planar complex.
No unpaired electrons, so the complex is diamagnetic.

$[NiCl_4]^{2-}$ is a high spin tetrahedral complex as it contains weak field Cl^- ligand in it.
Oxidation state of Ni in complex in +2
Electronic Configuration of Ni^{2+} is $3d^8\ 4s^6$.



It has two unpaired electrons, so the complex is paramagnetic.

28)

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

$$k = \frac{2.303}{1min} log \frac{[0.08]}{[0.04]}$$

k = 2.303 log 2
k = 2.303 X 0.3010
$k = 0.6932 min^{-1}$

$$k = \left(\frac{0.6932}{60}\right) s^{-1}$$

$k = 1.153 \times 10^{-2} s^{-1}$

29)

Let us consider the reactions between a strong acid, HCI, and a weak base, NH_4OH, to produce a salt, NH_4CI, and water.

$HCl_{(aq)} + NH_4OH_{(aq)} \rightleftharpoons NH4Cl_{(aq)} + H_2O$

$NH_4Cl_{(aq)} \longrightarrow NH_4^+ + Cl^-_{(aq)}$

NH_4^+ is a strong conjugate acid of the weak base $NH_4{}^40H$ and it has a tendency to react with OH^- from water to produce unionised NH_4OH shown below

$NH_4^+ (aq) + H_2O(l) \rightleftharpoons NH_4OH(aq) + H_{(a+q)}$

There is no such tendency shown by Cl^- and therefore $[H^+] > [OH^-]$; the solution is acidic and the pH is less than 7.

As discussed in the salt hydrolysis of strong base and weak acid. In this case also, we can establish a relationship between the K_h and K_b as

$K_h.K_b = K_W$

Let us calculate the Kh value in terms of degree of hydrolysis (h) and the concentration of salt

$K_h = h^2C$ and $\left[H^+\right] = \sqrt{K_h \cdot C}$

$$\left[H^+\right] = \sqrt{\frac{K_W}{K_b} \cdot C}$$

pH = -log [H+]

$$= -log\left(\frac{K_W \cdot C}{K_b}\right)^{\frac{1}{2}}$$

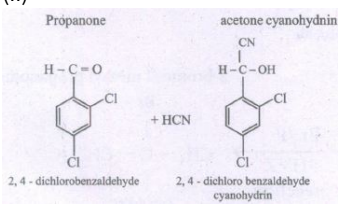
$$= -\frac{1}{2} logK_W - \frac{1}{2} logC + \frac{1}{2} logK_b$$

$$pH = 7 - \frac{1}{2} pK_b - \frac{1}{2} logC$$

30)

(i) $CH_3 - CO - CH_3 + HCN \underset{Propanone}{} \longrightarrow CH_3 - \underset{\underset{|}{CN}}{\underset{|}{C}}OH - CH_3 \underset{axetone}{} \quad \underset{cyanohdnin}{}$

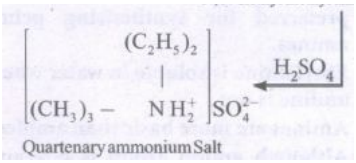
(ii)



31)

$$CH_3NO_2 \underset{Nitrimethane}{} \xrightarrow{LiAlH_4} CH_3NH_2 \quad (A)\,Methylamine$$

$$CH_3NH_2 \underset{Methylamine}{} \xrightarrow{2CH_3CH_2Br} CH_3 - N\left(C_2H_5\right)_2 \underset{diethyl \quad methyl \quad amine}{(B)\,N,N} + 2HBr$$



32)

(I) Hormone is an organic substance (e.g. a peptide or a steroid) that is secreted by one tissue into the blood stream and induces a physiological response (e.g. growth and metabolism) in other tissues.

(Ii) It is an intercellular signalling molecule. e.g, insulin, epinephrine.

(IIi) Hormones are classified into Endocrine, Paracrine and Autocrine hormones.

33)

Synthetic compounds which imprint a sweet sensation and possess no or negligible nutritional value 'are called artificial sweeteners.

Eg. Saccharin, Aspartame, sucralose, alitame etc ...

PART IV 5 x 5 = 45

ANSWER ALL THE QUESTIONS

34) a)

(i) A double salt which contains 4th period alkali metal (A) is $K_2SO_4.AL_2(SO_4)3.24H_2O$

(ii) $K_2SO_4Ai_2\,(SO_4)_3\,.24H_2O \xrightarrow{500} K_2S0_4Al_2\,(SO_4)3 + 24H_2O$

(iii) ∴ B is $K_2SO_4{\cdot}Al_z(SO_4)_3$. This gives white precipitate with $BaCI_2$.

(iv) $K_2SO_4{\cdot}Al_2CSO_4)_3$ gives red colour with Alizarin.

(v) A - $K_1S0_4.A1_2(S0_4)_324H_20$

B - $K_2S0_4.Al_zCS0_4)$

(OR)

b)

For a first order reaction

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

$$k = \frac{2.303}{t} log \frac{V_\infty}{V_\infty - V_1}$$

In the present case, V∘=58.3 ml.

t(min)	V_1	V∘=V_1	$\frac{2.303}{t} log \frac{V_0}{V_0 - V_1}$
6	19.3	58.3-19.3=39.0	$k = \frac{2.303}{6} log\left(\frac{58.3}{39}\right) = 0.0670 \quad min^{-1}$
12	32.6	58.3-32.6=25.7	$k = \frac{2.303}{12} log\left(\frac{58.3}{25.7}\right) = 0.0683 \quad min^{-1}$

18	41.3	58.3-41.3=17.0	$k = \frac{2.303}{18} log\left(\frac{58.3}{17}\right) = 0.0685 \quad min^{-1}$
24	46.5	58.3-46.5=11.8	$k = \frac{2.303}{24} log\left(\frac{58.3}{11.8}\right) = 0.0666 \quad min^{-1}$

35) a)

Hydrolysis of water

At anode:

$2H_2O \rightarrow 4H^+ + O_2 + 4e^- \ldots\ldots (1)$

At cathode:

$2H_2O + 2e^- \rightarrow H_2 + 2OH^-$

Overall reaction $6H_2O \rightarrow 4H^+ + 4OH^- + 2H_2 + O_2$

(or)

Equation (1) +(2) $x2 \Rightarrow 2H_2O \rightarrow 2H_2 + O_2$

∴ According to faradays Law of electrolysis, to electrolyse two mole of Water (36g 36 mL of H_2O), 4F charge is required alternatively, when 36 mL of water is electrolysed, the charge generated = 4×96500 C.

∴ When the whole water which is available on the lake is completely electrolysed the amount of charge generated is equal to $\frac{4 \times 96500 \quad C}{36 \quad mL} \times 9 \times 10^{12} L$

$= \frac{4 \times 96500 \times 9 \times 10^{12}}{36 \times 10^{-3}} C$

$=96500 \times 10^{15} C$

∴ Given that in 1 second, 2×10^6 C is generated therefore, the time required to generate 96500×10^{15} C is = $\frac{1 \quad S}{2 \times 10^6 C} \times 96500 \times 10^{15} C$

$=48250 \times 10^9 S$

∴ Number of years = $\frac{48250 \times 10^9}{365 \times 24 \times 60 \times 60}$ 1 year = 365 days

$=1.5299 \times 10^6$ years = 365 × 24 hours

=365 × 24 × 60 min

=365 × 24 × 60 × 60 sec.

(OR)

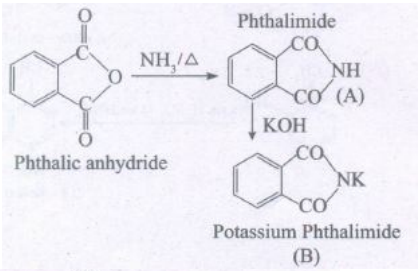
b)

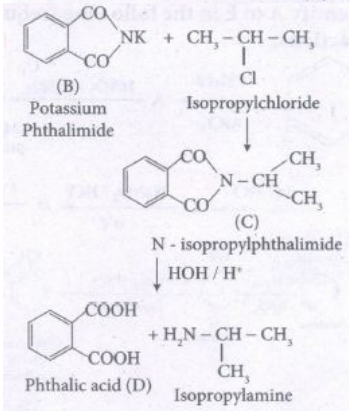
a) Bakelite - Cross linked polymer

b) Nylon - Linear polymer

c) polythene - Linear or straight polymer.

36) a)





37) a)

(i) Only the ions that have unpaired electrons in d- orbital and in which d - d transition is possible will be coloured.

(ii) The ions in which d - orbitals are empty or completely filled will be colourless as no d -d transition is possible in those configurations.

(iii) From the above ions, it can be easily observed that only Sc^{3+} has an empty d - orbital and Cu^{+} has completely filled d-orbitals.

(vi) All other ions, except Sc^{3+} and Cu^{+}, will be coloured in aqueous solution because of d - d transition.

(OR)

b)

$Al(OH)_3 \rightleftharpoons Al^{2+}(aq) + 3OH^{-}(aq)$

$K_{sp} = [Al^{3+}][OH^{-}]^3$

$Al(OH)_3$ precipitates when

$[Al^{3+}][OH^{-}] > K_{sp}$

$(1 \times 10^{-3})[OH^{-}]^3 > 1 \times 10^{-15}$

$[OH^3] > 1 \times 10^{12}$

$[OH^{-}] > 1 \times 10^{-4} M$

$[OH^{-}] = 1 \times 10^{-4} M$

$POH = -log_{10}[OH^{-}] = -log(1 \times 10^{-4}) = 4$

pH=14-4=10

Thus, Al $(OH)_3$ precipitates at a pH of 10

38) a)

d = Z x M /a^3 x NA

Where a is edge of unit cell

N_A = Avogadro no (6.022 x 10^{23})

M = Molar mass

Z = No. of atom per unit cell

For fcc Z = 4

m = d x a^3 x NA / Z

No of atom = (given mass / molar mass / m) x NA Putting the value of M in above equation we get

No. of moles = given mass x z x NA/d x a^3 x NA

No. of atom = Given mass x z/d x a^3

putting the values we get

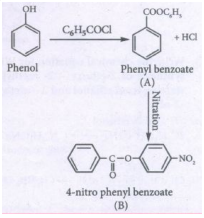
No. of atoms = 100g x $\frac{4}{40}$ g cm^3 x 100 x 10^{10} cm^3

= $\frac{400}{100}$ x10^{24}

= 4 x 10^{24} atoms.

(OR)

b)



A - Phenyl benzoate

B - 4-nitro phenyl benzoate

$$C_6CH_2 - CH(OH)CH\left(CH_3\right)_2 1-phyyl-3-methylButant-2-ol \xrightarrow{Conc} H_2SO_4C_6H_5 - CH = CH - CH\left(CH_3\right)_2 1-phenyl-3methyl \quad but-2-ene$$