All India CBSE Board 2020 Solved Paper

GENERAL INSTRUCTIONS

Read the following instructions very carefully and strictly follow them:

(i) This question paper comprises **four** Sections A, B, C and D. There are **37** questions in the questions paper. **All** questions are compulsory.

(ii) **Section A:** Questions no. **1** to **20** are very short answer type questions, carrying **1** mark each. Answer these questions in one word or one sentence.

(iii) **Section B:** Questions no. **21** to **27** are short answer type questions, carrying **2** mark each.

(iv) **Section C:** Questions no. **28** to **34** are long answer type-I questions, carrying **3** mark each.

(v) **Section D:** Questions no. **35** to **37** are long answer type-II questions, carrying **5** mark each.

(vi) There is no overall choice in the question paper. However, an internal choice has been provided in 2 questions of two marks, 2 questions of three marks and all the 3 questions of five marks. You have to attempt only one of the choices in such questions.

(vii) In addition to this, separate instructions are given with each section and question, wherever necessary.

(viii) Use of calculators and long tables is **not** permitted.

SECTION A

Read the given passage and answer the questions number 1 to 5 that follow:

The substitution reaction of alkyl halide mainly occurs by S_N1 or S_N2 mechanism. Whatever mechanism alkyl halides follow for the substitution reaction to occur, the polarity of the carbon halogen bond is responsible for these substitution reactions. The rate of S_N1 reactions are governed by the stability of carbocation whereas for S_N2 reactions steric factor is the deciding factor. If the starting material is a chiral compound, we may end up with an inverted product or racemic mixture depending upon the type of mechanism followed by alkyl halide. Cleavage of ethers with HI is also governed by steric factor and stability of carbocation, which indicates that in organic chemistry, these two major factors help us in decinding the kind of product formed.

1. Predict the stereochemistry of the product formed if an optically active alkyl halide undergoes substitution reaction by S_N1 mechanism.

2. Name the instrument used for measuring the angle by which the plane polarised light is rotated.

3. Predict the major product formed when 2-Bromopentane reacts with alcoholic KOH.

4. Give one use of CHI_3.

5. Write the structures of the products formed when anisole is treated with HI.

Questions number 6 to 10 are one word answers:

6. Identify which liquid will have a higher vapour pressure at 90°C if the boiling points of two liquids A and B are 140°C and 180º, respectively.

7. Out of zinc and tin, whose coating is better to protect iron objects?

8. Will the rate constant of the reaction depend upon T if the E_{act} (activating energy) of the reaction is zero?

9. Give the structure of the monomer of PVC.

10. Which structural unit present in a detergent makes it non-biodegradable?

Questions number 11 to 15 are multiple choice questions:

11. Out of the following, the strongest base in aqueous solution is

(a) Methylamine (b) Dimethylamine

(c) Trimethylamine (d) Aniline

12. Iodoform test is *not* given by

(a) Ethanol (b) Ethanal

(c) Pentan-2-one (d) Pentan-3-one

13. Out of the following transition elements, the maximum number of oxidation states are shown by

(a) Sc(Z = 21) (b) Cr(Z = 24)

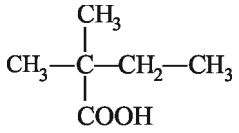
(c) Mn(Z = 25) (d) Fe(Z = 26)

14. Hardening of leather in tanning industry is based on

(a) Electrophoresis (b) Electro-osmosis

(c) Mutual coagulation (d) Tyndall effect

15. What is the correct IUPAC name of the given compound?



(a) 2, 2-Dimethylbutanoic acid

(b) 2-Carboxyl-2-methylbutane

(c) 2-Ethyl-2-methylpropanoic acid

(d) 3-Methylbutane carboxylic acid

For questions number 16 to 20, two statements are given – one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

(i) Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).

(ii) Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).

(iii) Assertion (A) is correct, but Reason (R) is incorrect statement.

(iv) Assertion (A) is incorrect, but Reason (R) is correct statement.

16. **Assertion (A)** : Au and Ag are extracted by leaching their ores with a dil. solution of NaCN.

Reason (R) : Impurities associated with these ores dissolve in NaCN.

17. **Assertion (A)** : F – F bond in F_2 molecule is weak.

Reason (R) : F atom is small in size.

18. **Assertion (A)** : Linkage isomerism arises in coordination compounds because of ambidentate ligand.

Reason (R) : Ambidentate ligand like NO_2 has two different donor atoms i.e., N and O.

19. **Assertion (A)** : Sucrose is a non-reducing sugar.

Reason (R) : Sucrose has glycosidic linkage.

20. **Assertion (A)** : The molecularity of the reaction $H_2 + Br_2 \rightarrow 2HBr$ appears to be 2.

Reason (R) : Two molecules of the reactants are involved in the given elementary reaction.

SECTION B

21. Define the following terms:

(a) Tranquilizers

(b) Antiseptic

Or

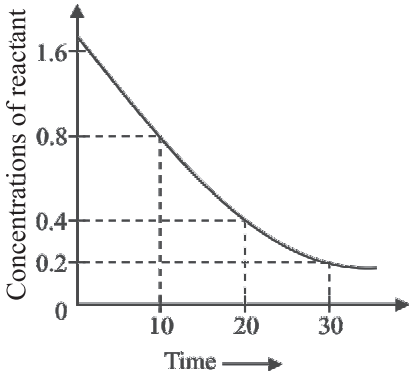
Explain the cleansing action of soaps.

22. For a 5% solution of urea (Molar mass = 60 g/mol), calculate the osmotic pressure at 300 K. [R = 0.0821 L atm K^{-1} mol^{-1}]

Or

Visha took two aqueous solutions – one containing 7.5 g of urea (Molar mass = 60 g/mol) and the other containing 42.75 g of substance Z in 100 g water, respectively. It was observed that both the solutions froze at the same temperature. Calculate the molar mass of Z.

23. Analyse the given graph, drawn between concentration of reactant vs. time.



(a) Predict the order of reaction.

(b) Theoretically, can the concentration of the reactant reduce to zero after infinite time? Explain

24. Draw the shape of the following molecules:

(a) $XeOF_4$ (b) BrF_3

25. Give the formulae of the following compounds:

(a) Potassium tetrahydroxidozincate (II)

(b) Hexaammineplatinum (IV) chloride

26. What happens when

(a) Propanone is treated with methylmagnesium iodide and then hydrolysed, and

(b) Benzene is treated with CH_3COCl in presence of anhydrous $AlCl_3$?

27. Write the names and structures of monomers in the following polymers:

(a) Bakelite (b) Neoprene

SECTION C

28. Give the structures of A and B in the following sequence of reactions:

(a) $CH_3COOH \xrightarrow[\Delta]{NH_3} A \xrightarrow{NaOBr} B$

(b) $C_6H5NO_2 \xrightarrow{Fe/HCl} A \xrightarrow[0° - 5°C]{NaNO_2 + HCl} B$

(c) $C_6H5N_2 + Cl- \xrightarrow[\Delta]{CuCN} A \xrightarrow{H_2O/H^+} B$

Or

(a) How will you distinguish between the following pairs of compounds:
(i) Aniline and Ethanamine
(ii) Aniline and N-methylaniline

(b) Arrange the following compounds in decreasing order of their boiling points:
Butanol, Butanamine, Butane

29. Give the plausible explanation for the following:
(a) Glucose doesn't give 2,4-DNP test.
(b) The two strands in DNA are not identical but are complementary.
(c) Starch and cellulose both contain glucose unit as monomer, yet they are structurally different.

30. Account for the following:
(a) Sulphurous acid is a reducing agent.
(b) Fluorine forms only one oxoacid.
(c) Boiling point of noble gases increases from He to Rn.

Or

Complete the following chemical reactions:
(a) $MnO_2 + 4HCl \longrightarrow$
(b) $XeF_6 + KF \longrightarrow$
(c) $I^-(aq) + H^+(aq) + O_2(g) \longrightarrow$

31. Explain the role of the following:
(a) NaCN in the separation of ZnS and PbS.
(b) SiO_2 in the metallurgy of Cu containing Fe as impurity.
(c) Iodine in the refining of Ti.

32. Give three points of difference between physisorption and chemisorption.

33. How will the rate of the reaction be affected when
(a) Surface area of the reactant is reduced,
(b) Catalyst is added in a reversible reaction, and
(c) Temperature of the reaction is increased?

34. Calculate the mass of ascorbic acid (Molar mass = 176 g mol^{-1}) to be dissolved in 75 g of acetic acid, to lower its freezing point by 1.5°C. (K_f = 3.9 K kg mol^{-1})

SECTION D

35. (a) Calculate $\Delta G°$ for the reaction

$Zn(s) + Cu^{2+}(aq) \longrightarrow Zn^{2+}(aq) + Cu(s)$

Given: E° for Zn^{2+}/Zn = –0.76 V and

E° for Cu^{2+}/Cu = +0.34 V

$R = 8.314\ JK^{-1}\ mol^{-1}$

$F = 96500\ C\ mol^{-1}$

(b) Give two advantages of fuel cells.

Or

(a) Out of the following pairs, predict with reason which pair will allow greater conduction of electricity:
(i) Silver wire at 30°C or silver wire at 60°C.
(ii) 0.1 M CH3COOH solution or 1 M CH3COOH solution.
(iii) KCl solution at 20°C or KCl solution at 50°C.

(b) Give two points of differences between electrochemical and electrolytic cells.

36. (a) Account for the following:
(i) Copper (I) compounds are white whereas Copper (II) compounds are coloured.
(ii) Chromates change their colour when kept in an acidic solution.
(iii) Zn, Cd, Hg are considered as *d*-block elements but not as transition elements.

(b) Calculate the spin-only moment of Co^{2+} (Z = 27) by writing the electronic configuration of Co and Co^{2+}.

Or

(a) Give three points of difference between lanthanoids and actinoids.

(b) Give reason and select one atom/ion which will exhibit asked property:
(i) Sc^{3+} or Cr^{3+} (Exhibit diamagnetic behaviour)
(ii) Cr or Cu (High melting and boiling point)

37. (a) Out of *t*-butyl alcohol and *n*-butanol, which one will undergo acid catalyzed dehydration faster and why?

(b) Carry out the following conversions:
(i) Phenol to Salicylaldehyde
(ii) *t*-butylchloride to *t*-butyl ethyl ether
(iii) Propene to Propanol

Or

(a) Give the mechanism for the formation of ethanol from ethene.

(b) Predict the reagent for carrying out the following conversions:
(i) Phenol to benzoquinone
(ii) Anisole to *p*-bromoanisole
(iii) Phenol to 2,4,6-tribromophenol

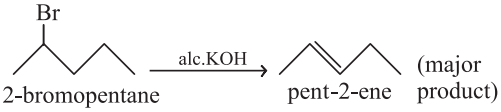
Solutions

SECTION A

1. Inversion occurs more than retention, leading to partial racemization.

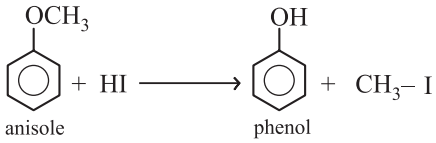
2. Polarimeter

3.



4. Iodoform (CHI_3) is used as a disinfectant.

5.

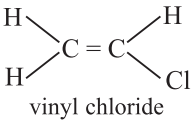


6. Liquid A has higher vapour pressure.

7. Zn Coating is better to protect iron objects.

8. No

9.



10. Branched hydrocarbon chains.

11. (b) Order of basicity in aqueous solution for methyl substituted ammonia: $2° > 1° > 3° > NH_3$

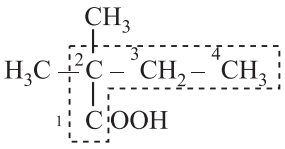
12. (d) The iodoform test is a test for the presence of carbonyl compounds with the structure $RCOCH_3$ and alcohols with the structure $R - CH(OH)CH_3$.

13. (c) Mn(25) = $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^5\ 4s^2$

Mn an show maximum number of oxidation states from +1 to +7.

14. (c) **Mutual Coagulation:** Tannin contains a negatively charged colloidal particle whereas leather has a positively charged colloidal particle. Thus, coagulation occurs when leather is soaked in tannin.

15. (a) 2, 2-Dimethylbutanoic acid



16. (iii) Au and Ag are extracted by leaching their ores with a dil. solution of NaCN because Au and Ag form a soluble complex compound with CN^- and can be separated from their ores. Hence, assertion is correct but reason is incorrect.

17. (i) Because of small size of F atoms, their is repulsion of electrons in F_2 molecule. Thus, F-F bond in F_2 molecule is weak.

Hence, reason is the correct explanation of given assertion.

18. (i) Ambidentate ligand like NO_2 has two different donor atoms *i.e.* N and O. Thus, it can form coordinate bonds through N and O both or we can say that it can form linkage isomers.

19. (ii) Sucrose is a non-reducing sugar because the two monosaccharide units are held together by a glycosidic linkage between C_1 of α-glucose and C_2 of β-fructose. The reducing groups are involved in glycosidic bond formation.

20. (i) The molecularity of a reaction depends only on the stoichiometry of the reaction. Hence, molecularity of the reaction $H_2 + Br_2 \rightarrow 2HBr$ is two.

Hence, reason is the correct explanation of given assertion.

SECTION B

21. (a) **Tranquilizers:** These are the chemical compounds which are used for the treatment of stress and mental diseases.

(b) **Antiseptic:** These are the chemical compounds which prevent the growth of micro-organism or may even kill them.

Or

Cleansing action of soaps: A molecule of soap constitutes sodium or potassium salts of long-chain carboxylic acids.

Dirt or oil does not dissolve in water. But the carbon chain of soap dissolve in oil and the ionic end dissolves in water. Soap molecules form micelle around the dirt particle in such a way that hydrophobic part of soap is in dirt particle and hydrophilic part is in water. Therefore, soap forms an emulsion in water and helps in dissolving dirt.

22. 5% urea solution means. 5g urea is present in 100 mL of solution.

Molarity of solution $c = \frac{5\text{g}}{60\ \text{g/mol}} \times \frac{1000}{100\text{L}}$

$c = \frac{10}{12}\text{mol/L}$

Osmotic pressure $\pi = CRT$

$= \frac{10}{12} \times 0.0821 \times 300$

$= 20.525$ atm

Or

It is given that the depression in freezing points of the two given aqueous solution are same.

$$(\Delta T_f)_{urea} = (\Delta T_f)_z$$

$$m_{urea} \times (k_f)_{water} = m_z \times (kf)_{water}$$

$$\Rightarrow \frac{\frac{7.5}{60}}{\frac{100}{1000}} = \frac{\frac{42.75}{M_z}}{\frac{100}{1000}}$$

$$\Rightarrow M_z = 342 \text{ g/mol}$$

23. (a) Half-life calculation from the given graph: Concentration of reactant reduces from 0.8 to 0.4 in (20 – 10) = 10 seconds.

Again the concentration reduces to half (0.4 to 0.2) in (30 – 20) = 10 seconds.

Thus, the half-life of reaction remains constant or we can say that order of reaction is one.

(b) For a first order reaction, concentration never reduces to zero. For first order reaction $ln \frac{[A]}{[A]_0} = -kt$

$[A] = [A]_0 e^{-kt}$

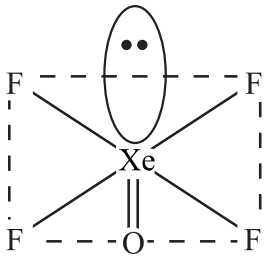
where $[A]_0$ is the initial concentration of the reactant.

mathematically, $[A] > 0$ for all $t < \infty$

24. (a) No. of sigma bonds = 5

No. of lone pair of electrons with Xe = 1

Thus, the molecular geometry will be octahedral with 5 bond pairs of electrons and one lone pair of electrons. To reduce the lp-bp repulsions, the electron pair will occupy one of the axial position.



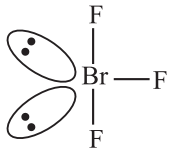
Shape: square pyramidal

(b) No. of sigma bonds = 3

No. of lone pairs of electrons = 2

Now, 3 pond pairs and 2 lone pairs of electrons take the geometry of trigonal bipyramidal.

To reduce the lp-bp repulsions, BrF_3 forms T-shape molecule.



25. (a) Potassium tetrahydroxidozincate(II)

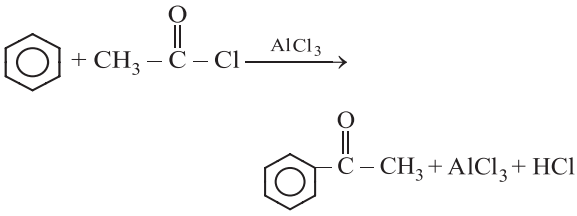
$K_2[Zn(OH)_4]$

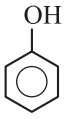
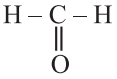
(b) Hexaammineplatinum(IV) chloride

$[Pt(NH_3)_6]Cl_4$

26. (a) $CH_3-\underset{\underset{O}{\|}}{C}-CH_3 + CH_3-MgI \longrightarrow CH_3-\underset{\underset{-^5O\text{-}Mgl}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$

$\xrightarrow[\text{hydolysis}]{H^+ OH^-} CH_3-\underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3 + Mg(OH)I$

(b) 

27. (a)  and 

phenol formaldehyde

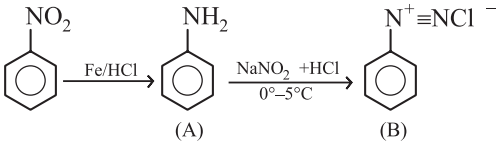
(b) $CH_2=\underset{\underset{Cl}{|}}{C}-CH=CH_2$

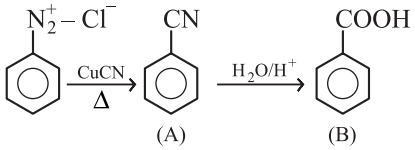
chloroprene

SECTION C

28. (a) $CH_3-COOH + NH_3 \longrightarrow CH_3COO^-NH_4^+ \xrightarrow[-H_2O]{\Delta}$

$\underset{(A)}{CH_3-CO-NH_2} \xrightarrow{NaOBr} \underset{(B)}{CH_3-NH_2}$

(b) 

(c) 

Or

(a) (i) Aniline and ethanamine can be distinguished by the azo-dye test.

An orange dye is obtained when aniline reacts with ($NaNO_2$ + dil. HCl) at 0°–5°C followed by a reaction with alkaline solution of 2-naphthol.

Ethanamine gives a brisk effervescence with the same solution due to evolution of N_2 gas.

(ii) Only primary amines reacts with ($CHCl_3$ + KOH) to give a foul odour of isocyanide (carbylamine reaction).

Hence, aniline will give this test but N-methylaniline will not.

(b) $CH_3–CH_2–CH_2–CH_2–OH$ (butanol)

$CH_3–CH_2–CH_2–CH_2–NH_2$ (butanamine)

$CH_3–CH_2–CH_2–CH_3$ (butane)

Due to hydrogen boding, the decreasing order of boiling point is: Butanol > Butanamine > Butane

29. (a) Aldehyde group is not free in glucose, it involve in the formation of cyclic structure in glucose. Thus, it does not react with 2, 4-dinitrophenylhydrazine

(b) The two strands in DNA are held together by hydrogen bonds between specific pair of bases (cytosine with guanine and adenine with thymine).

Thus, the two strands are complementary to each other.

(c) Starch contain α-D-glucose and cellulose contain β-D-glucose as their monomers.

30. (a) Sulphurous acid can be oxidized to sulphuric acid and therefore can act as a reducing agent.

(b) Due to small size and high electronegativity, fluorine cannot remain in higher oxidation state and therefore, cannot act as a central atom in higher oxoacids. It forms only one oxoacid HOF.

(c) Only weak dispersion forces act as interatomic attraction in noble gases. Thus, as the atomic mass increases, boiling point increases from He to Rn.

Or

(a) $MnO_2 + 4HCl \longrightarrow MnCl_2 + Cl_2 + 2H_2O$

(b) $XeF_6 + KF \longrightarrow K^+ [XeF_7]^-$

(c) $4I^-(aq) + 4H^+(aq) + O_2(g) \longrightarrow 2I_2 + 2H_2O$

31. (a) Sulphide ores are concentrated by froth floatation method in which NaCN is used as depressant. NaCN reacts with ZnS to form $Na_2[Zn(CN)_4]$ but does not react with PbS and allow PbS to come with the froth.

(b) If the sulphide ore of Cu contains impurity of FeO then SiO_2 (acidic flux) can remove the impurity FeO (basic gangue) as $FeSiO_3$ (Slag).

(c) $\underset{\text{(impure)}}{Ti} + 2I_4 \xrightarrow{\Delta} Ti\,I_4$

$Ti\,I_4 \xrightarrow[1800K]{w} \underset{\text{(pure)}}{Ti} + 2I_2$

32.

Physisorption		Chemisorption	
(a)	It arises because of van der Waals' forces.	(a)	It is caused by chemical bond formation.
(b)	It is reversible in nature.	(b)	It is irreversible.
(c)	Low temperature is favourable for adsorption.	(c)	High temperature is favourable for adsorption.

33. (a) When surface area of the reactant is reduced, the rate of reaction will also reduce.

(b) A catalyst increases both the rates of forward and backward reactions of a reversible reaction to the same extent.

(c) Increase in temperature reduces the activation energy and thus increases the rate of reaction.

34. Let '*w*' be the required mass of ascorbic acid.

Molality of ascorbic and $m = \dfrac{w/176}{75/1000}$

$$m = \frac{w}{176} \times \frac{1000}{75}$$

$(k_f)_{acetic} = 3.9\ K\ kg\ mol^{-1}$

$\Delta T_f = 1.5°C$

$\Rightarrow \Delta T_f = 1.5\ K$

$\Delta T_f = m.k_f$

$$\Rightarrow 1.5 = \frac{w}{176} \times \frac{1000}{75} \times 3.9$$

$\Rightarrow$ w = 5.08 g ≈ 5g

SECTION D

35. $Zn(s) + Cu^{2+}(aq) \longrightarrow Zn^{2+}(aq) + Cu(s)$

$E^o_{Cu^{2+}/Cu} = E^o_{cathode} = +\ 0.34\ V$

$E^o_{Zn^{2+}/Zn} = E^o_{anode} = -\ 0.76\ V$

$E^o_{cell} = E^o_{cathode} - E^o_{anode}$

$= 0.34 - (-0.76) = 1.1\ V$

$n = 2$

$F = 96500\ C\ mol^{-1}$

$\Delta G^o = -nF\ E^o_{cell}$

$= -2 \times 96500 \times 1.1$

$= -212.27\ kJ\ mol^{-1}$

(b) (i) Fuel cells produce electricity with an efficiency of about 70% compared to thermal plants whose efficiency is about 40%.

(ii) Fuel cells are pollution free because the by-product of H_2–O_2 fuel cell is H_2O.

Or

(a) (i) Electrical conduction of metals decreases with increase in temperature. Thus, silver wire at 30°C will show greater conduction of electricity.

(ii) Conductance of solution increases on increase in dilution. Hence, 0.1 M CH_3COOH solution will allow greater conduction of electricity.

(iii) Increase in temperature increases the dissociation of an ionic compound. Thus, KCl solution at 50°C will show greater conduction of electricity.

(b)

	Electrochemical cell		Electrolytic cell
i.	It generates electricity by chemical reactions.	i.	Chemical reactions takes place by consuming electricity.
ii.	Anode has negative and cathode has positive potential with respect to solution.	ii.	Anode has positive and cathode has negative potential with respect to solution.

36. (a) (i) $_{29}Cu = 1s^2\ 2s^2\ 2p^6\ 3s^2 3p^6 3d^{10}\ 4s^1$

$Cu^+ = 1s^2\ 2s^2\ 2p^6\ 3s^2 3p^6 3d^{10}$

$Cu^{2+} = 1s^2\ 2s^2\ 2p^6\ 3s^2 3p^6 3d^9$

Due to unpaired electron, Cu^{2+} is coloured and due to all paired electrons, Cu^+ is white.

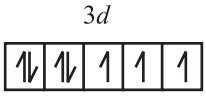
(ii) In acidic solution, yellow coloured chromate ions change to orange coloured dichromate ions.

$$2CrO_4^{2-} + 2H^+ \longrightarrow Cr_2O_7^{2-} + H_2O$$

(iii) Zn, Cd and Hg are in *d*-block of modern periodic table but they have fully filled (d^{10}) *d*-orbitals. Hence, they are not considered as transition elements.

(b) $_{27}Co = 1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^7\ 4s^2$

$Co^{2+} = 1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^7$



Unpaired electrons, $n = 3$

Spin only magnetic moment

$= \sqrt{n(n+2)}$ B.M.

$= \sqrt{3(3+2)}$ B.M.

$\sqrt{15}$ B.M.

= 3.87 B.M.

Or

(a)

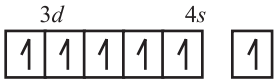
	Lanthanoids		Actinoids
i.	Lanthanoid contraction is the consequence of poor shielding by 4*f*-electrons.	i.	Actinoid contraction is greater from element to element resulting from poorer shielding by 5*f*-electrons.
ii.	Most common oxidation state in lanthanoids are +3.	ii.	There is a greater range of oxidation states which attributed to the fact that the 5*f*, 6*d* and 7*s* levels are of comparable energies.
iii.	Less tendency of complex formation. Lanthanoid are non radioactive except promethium.	iii.	These are more reactive metals. Actinoids are radioactive.

(b) (i) $_{21}Sc = 1s^2\ 2s^2\ 2p^6\ 3s^2 3p^6 3d^1\ 4s^2$

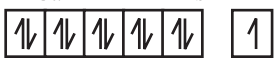
$Sc^{3+} = 1s^2\ 2s^2 2p^6\ 3s^2 3p^6$

Because of no unpaired electrons, Sc^{3+} is diamagnetic.

(ii) $_{24}Cr = 1s^2\ 2s^2\ 2p^6\ 3s^2 3p^6 3d^5\ 4s^1$



$_{29}Cu = 1s^2\ 2s^2 2p^6\ 3s^2 3p^6 3d^{10}\ 4s^1$

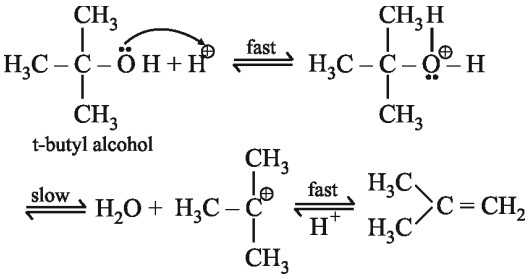


Due to greater number of unpaired electrons which involve in metallic bonding, Cr has high melting point.

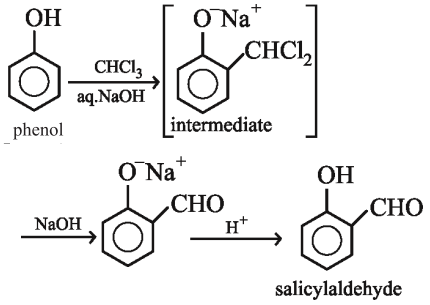
Due to high enthalpy of atomisation, Cr has high boiling point than that of Cu.

37. (a) In the acid catalysed dehydration of alcohols, the slowest step or the rate determining step is the formation of carbocation.

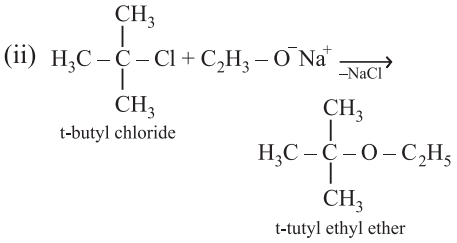
Dehydration of tertiary alcohols will be fastest because tertiary carbocation is most stable.



(b) (i)



(ii)



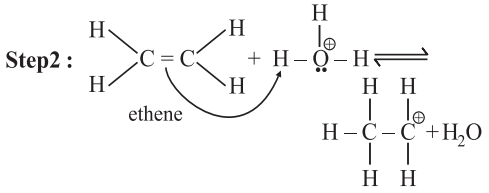
(iii) $6CH_3-CH=CH_2 + B_2H_6 \longrightarrow$
propene diborane

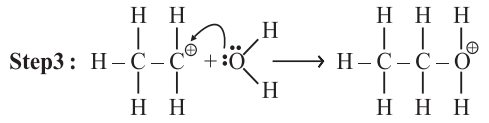
$2(CH_3-CH_2-CH_2)_3B \xrightarrow{H_2O_2}$

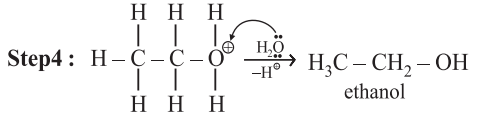
$CH_3-CH_2-CH_2-OH + B(OH)_3$
propanol boric acid

Or

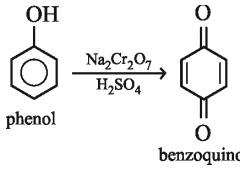
(a) **Step1 :** $H_2O + H_2SO_4 \longrightarrow H_3O^{\oplus} + HSO_4^{\ominus}$



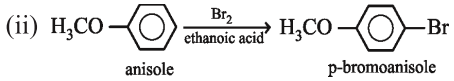




(b) (i)



(ii)



(iii)