CHEMISTRY (CLASS 12TH)

UNIT 1 (SOLUTION)

QUESTION CARRY1 MARKS

2019

1. Colligative property among the following is :
(a) Osmotic Pressure
(b) Boiling Point
(c) Vapour Pressure
(d) Viscosity
2. Define Osmotic pressure ?

2020

1. The solution showing positive deviation:
(a) have ΔV (mixing) = +ve
(b) have ΔH (mixing) = -ve
(c) form minimum boiling azeotropes
(d) have ΔV (mixing) = -ve
2. Why does the molality of the solution remain unchanged with temperature?
3. Unit of molarity is :
(a) Mol/L (b) Mol/Kg (c) ppm (d) Cm^3

2021

1. Ideal Solution obeys Raoult's law:
(a) When conc. of solution is less
(b)When conc. of solution is high
(c) Over entire range of conc.
(d) None of these.
2. S.I unit of mole fraction is :
(a) Mol/L (b) Mol (c) No units (d) None of these
3. Smoke is a .....type of colloidal system.
4. Colligative Property depends upon.....
5. The solution which do not obey Raoult's Law is :
(a) Ideal solution
(b) Non-ideal solution
(c) Both (a) and (b)
(d) None of these
6. Unit of molality is :
(a) Mol/L (b) Mol/Kg (c) Mol/Cm^3 (d) none of these.
7. Elevation in boiling point is a colligative property because it depends upon.....
8. Osmotic pressure is a colligative property because it depend upon.....
9. What is the reduction electrode potential value of SHE .

2022

1. The boiling point of a solvent containing non - volatile solute:
(a) is depressed (b) is elevated (c) does not change (d) none of these
2. Molal elevation constant is also called:
(a) Cryoscopic constant
(b) Gas constant
(c) Ebullioscopic constant
(d) Freezing point depression constant
3. Isotonic Solution have:
(a) same boiling point
(b) same vapour pressure
(c) same osmotic pressure
(d) same melting point

4. Colligative property among the following is:
(a) Osmotic pressure
(b) Boiling point
(c) Vapour pressure
(d) Viscosity
5. Colligative property depends upon :
(a) The nature of solute
(b) The nature of solvent
(c) Number of solute particles
(d) Number of solvent particles
6. Define Henry's Law.
7. Define Molality.
8. Define Van't Hoff factor.
9. Define Molarity.

2024

1. What is Van't Hoff factor?
2. Which of the following methods to express concentration has no units?
(a) Molarity (b) Molality (c) Mole Fraction (d0 Normality

2025

1.Which of the following is not a colligative property?
(a) Osmotic Pressure
(b) Boiling Point
(c) Vapour Pressure
(d) Viscosity
2.What is Van't Hoff factor?
3. Molarity of pure water is:
(a) 18 (b) 5.56 (c) 55.55 (d) 100
4. Why depression in freezing point temperature is a colligative property?
5. The unit of concentration of solution which is independent of temperature :
(a) Molarity (b) Normality (c) Molality (d) None of these

QUESTION CARRY 2 MARKS

2018

1. Prove that relative lowering in the vapour pressure is a colligative property.
2. A solution is 25% water ,25% ethanol and 50% acetic acid by mass. Calculate the mole fraction of ethanol and acetic acid in the solution.
3. Define Colligative Properties and give its types .
4. Molality is preferred over Molarity .why?
5. Differentiate between Ideal and Non-Ideal Solution.
6. Define the term:
(a) Molarity (b) Molality

2019

1. 1.00g of a non-electrolyte solute dissolved in 50g of benzene lowered the freezing point of benzene by 0.40K. he freezing point depression constant of benzene is 5.12K Kg/mol . Find the molar mass of the solute?
2. 18 g of glucose is dissolved in 1kg of water in a sauce pan. At what temperature will water boil at 1.013 bar ? K_b for water is 0.52 K Kg/mol. water boils at 373.15K at 1.013 bar pressure .
3. Define Raoult's Law for a solution of volatile liquids.

2020

1. Concentrate nitric acid used in laboratory work is 68% nitric acid by mass in aquous solution. What should be the molarity of such sample of the acid if the density of the solution is 1.504gm/L.
2. A solution of glucose in water is labelled as 10% w/w. What would be the molality of the solution? (Molar mass of glucose = 180g/mol).

2021

1.Show that elevation in boiling point is a colligative property?
2.Explain by showing diagram, the behaviour of non-ideal solution showing +ve deviations from Raoult's Law.
3.Show that depression in freezing point is a colligative property.
4.Explain by showing diagram, the behaviour of non-ideal solution showing -ve deviations from Raoult's Law.
5.Show that relative lowering in vapour pressure is a colligative property.
6.Define the following terms: osmosis and osmotic pressure.

2022

1. What is relative lowering of vapour pressure? Prove that it is a colligative property.
2. What is depression in freezing point? Prove that it is a colligative property.

2025

1. 45g of ethylene is mixed with 600g of water. Calculate :
(i) Depression in freezing point of solution.
(ii) Freezing point of solution. (k_f of water = 1.86 K Kg/mol)
2. The boiling point of benzene is 353.23K. When 1.80g of non- volatile solute was dissolved in 90 g of benzene the boiling point is raised to 354.11K. Calculate molar mass of the solute (k_b of benzene = 2.53 K kg/mol).
3. Give the importance of Van't hoff factor?
4. Calculate the mole fraction of ethylene dlycol in an aquous solution containing 20% of ethylene glycol by mass.
5. State and explain Raoults law for solution containing volatile solute and solutions containing non-volatile solute.
6. Why depression in freezing point is a colligative property?
7. What is osmotic pressure ? Determine molar mass of solute by osmotic pressure.

UNIT 2 (ELECTROCHEMISTRY)

QUESTION CARRY 1 MARKS

2018

1. The electrode potential of SHE fixed as:
(a) 0.34V (b) -0.44V (c) 0V (d) -0.76V
2. Explain Electrochemical Series.
3. Can we store 1M $CuSO_4$ in Zn vessel or not Why?
4. Define Faraday's Second Law?
5. Define Fuel Cell?
6. Define Primary Cell?
7. Define Secondary cells.
8. Define Faraday's First Law?
9. Why does Iron gain weight as a result of rusting?
10. With increase in temperature the conductivity of semiconductor:
(a) Decreases (b) Increases (c) No change (d) Increases then Decreases

2019

1. Isotonic solution have:
(a) same boiling point
(b) same vapour pressure
(c) same melting point
(d) same osmotic pressure
2. State Faraday's first law of electrolysis.
3.What is Galvanisation?

2020

1. Which of the following is correct regarding corrosion /rusting:
2. Iron rusts faster in saline water than in pure water
3. Less active metals are readily corroded

4. Air and moisture decreases corrosion
5. Corrosion occurs slowly at bends, scratches or cuts in the metals
6. In galvanization, metal plating on the iron to protect against corrosion is :
(a) Nickel plating (b) Copper plating (c) Tin plating (d) Zinc plating
7. What is semi permeable membrane?

2021

1.The S.I Units of conductance is:
(a) Siemens (b) S/m (c) Ampere (d) None of these.
2. A weak Electrolyte :
(a) Does not dissociate into ions
(b) Dissociate into ions incompletely
(c) Dissociate into ions completely
(d) None of these
3. Potential of an electrode means.....
4. Kohlrausch's law is used to calculate molar conductance at infinite dilation for .....electrolytes.
5. Define Galvanic Cell.
6. Define conductivity.
7. The potential of SHE is assumed as :
(a) Zero volt (b) 1.10 volt (c) 1 volt (d) None of these
8. Standard electrode potential means, the potential when..... flows in the internal circuit of a Galvanic cells.
9. What is the function of salt bridge?
10.The S.I Units of resistivity is :
(a) Ohm m (b) ohm/m (c) $ohm^{-1}\ m^{-1}$ (d) none of these
11. A strong Electrolyte :
(a) Does not dissociate into ions
(b) Dissociate into ions incompletely
(c) Dissociate into ions completely
(d) None of these
12. The S.I Units of conductivity is :
(a) S/m (b) Ohm (c) Ohm/Cm (d) None of these

2023

1.In Lead storage battery the anode is made of ……
2. In dry cell, the cathode is made of……
3. In mercury cell, the anode is made of……
4. The S.I Units of conductivity is :
(a) S/m (b) Ohm (c) Ohm/Cm (d) None of these

2024

1. Anode in an electrochemical cell is that electrode on which the following is essential?
(a) +ve charge (b) -ve charge (c) oxidation occur (d) reduction ocurs
2.State Faraday's First Law of electrolysis.
3.Cathode in an electrochemical cell is that electrode on which the following is essential?
(a) +ve charge (b) -ve charge (c) oxidation occur (d) reduction occurs

2025

1. The electrode potential of SHE is arbitrarity fixed as:
(a) 0 (b) 0.34V (c) -0.34V (d) 0.76V
2. A weak electrolyte:
(a) does not dissociate into ions.
(b) dissociate completely into ions.
(c) dissociate into ions but not completely.
(d) none of these.
3. State faradays second law of electrolysis.
4.$CuSO_4$ solution can not be stored in a vessel made up of:

(a) zinc (b) glass (c) copper (d) plastic.

5. A strong electrolyte :

(a) does not dissociate into ions.

(b) dissociate into ions completely

(c) dissociate into ions but not completely.

(d) none of these.

6. Unit of cell constant is :

(a) $ohm^{-1}cm^{-1}$ (b) cm (c) $ohm^{-1}cm$ (d) cm^{-1}

7. Chemical formula of rust is ……..

8. Can we store $CuSO_4$ solution in Zn vessel?

9. Give the unit of molar conductance.

QUESTION CARRY 2 MARKS

2018

1. Explain the working of Fuel Cell?
2. Explain Lead Storage Cell?
3. Explain Electrochemical Theory of Rusting of Iron?
4. Explain Ni-Cd Storage Cell?
5. Differentiate Between primary and Secondary Cells.

2019

1. Discuss the working of dry cell.
2. What is primary cell? How do they differ from secondary cells?
3. State Faraday's Law of Electrolysis .
4. Discuss the working of Lead storage cell?
5. Give four difference between e.m.f and potential difference .

2020

1.What is a semiconductor? Describe the two main types of semiconductors.

2. The standard electrode potential fordaniel cell is 1.1 V. calculate the standard gibbs energy for the reaction.

3.Explain the construction and working of dry cell.

4.Explain construction and working if Ni-Cd Storage cell.

5.Calculate the emf of the cell in which the following reaction takes place:

$Ni(s) + 2\ Ag(0.002M) \rightarrow Ni(0.160M) + 2\ Ag(s)$

Given that $E^0_{cell} = 1.05V$

2021

1.State and explain Kohlrausch's Law .

2.How much charge in coulombs is required for oxidation of 2 mole of H_2O to O_2?

3.State and explain faraday's 1st law of electrolysis.

4. State and explain faraday's 2st law of electrolysis.

2023

1.Give electrochemical theory of rusting of iron.

2.Give the reaction at cathode and anode of lead storage battery during charging and discharging.

3. How much charge is required for the reduction of 1mole of Cu^{2+} to Cu?

4. Give construction and working of Dry Cell.

5.How much charge is required for the reduction of 1mole of Al^{3+} to Al?

2024

1. Explain the construction and working of a lead storage battery.

2. Represent the cell in which following reaction take place

$Zn_{(s)} + Cu^{2+}_{(aq)}(1M) \longrightarrow Zn^{2+}_{(aq)} + Cu_{(s)}$.

Calculate its $E_{(cell)}$ if $E^o_{(cell)} = 1.10V$

3. Explain the construction and working of dry cell.

2025

1. Write four difference between e.m.f and potential difference.
2. Calculate the e.m.f of the cell at 298K, Sn (s) \$Sn^{2+}$ (0.050M) II H^+(0.020M) \$H_2$ (1 bar) \Pt(s)
   Given, Log 5 = 0.699, log 2 = 0.3010 and E_{cell}^o= 0.14V.
3. Calculate E_{cell} for given cell if E_{cell}^o= 3.17 V.
   Mg/Mg^{2+}(0.130M) IIAg^{2+}(0.0001M) /Ag. Given log 13 = 1.1139.
4. Give construction and working of dry cell.
5. How much charge is required for the reduction of 1mol of MnO_4^- to Mn^{2+}?
6. Calculate the e.m.f of the cell at 298K, Fe(s) /Fe^{2+}(0.001M) II H^+(1M)/H_2 (g) . Given E_{cell}^o = 0.44V.

UNIT 3 (CHEMICAL KINETICS)

QUESTION CARRY1 MARKS

2018

1. What is the units of Rate Constant for 3rd order Reaction?
2. Rate of reaction= $K[H_2]^0$ $[Cl_2]^0$,according to rate law equation. Predict the order of reaction.
3. What is activation energy ?
4. What is the unit of rate constant for second order reaction?
5. Write Arrhenius equation.
6. Define order of reaction ?
7. Write the units of rate constant for zero order reaction.

2019

1. Rate constant depends upon :
   (a) temperature (b) time (c) initial concentration (d) none of these
2. Define the term Rate constant.
3. Give the units of rate constant for 3rd order reaction.
4. The chemical reactions in which the reactants require high amount of activation energy are generally:
   (a) slow (b) fast (c) instantaneous (d) none of these
5. Define the term Zero order reaction.
6. Give the units of rate constant for 2nd order reaction.

2020

1. The rate constant of a reaction has s^{-1} units. The reaction is of :
   (a) 3rd order (b) 1st order (c) 0 order (d) 2nd order
2. The rate constant of a reaction has same units as the rate of reaction. The reaction is of :
   (a) Third order (b) Second order (c)First order (d) Zero order
3. What are activated complex?
4. What is rate determining step of a reaction?

2021

1. The order of reaction for the rate expression;
   Rate = $K [A]^{\frac{1}{2}}$ $[B]^{\frac{1}{2}}$ is:
   (a) 1 (b) 2 (c) 3 (d) None of these
2. Unit of rate constant for first order reaction is .....
3. Molecularity of the reaction : $PCl_3 + Cl_3 \longrightarrow$ PCl_5 is .....
4. The order of reaction for the rate expression;
   Rate = K [A] [B]is:
   (a) 2 (b) 1 (c) 3 (d) None of these
5. The unit of rate constant for second order reaction is .....
6. The order of reaction for the rate expression;
   Rate = $K [A][B]^2$is:
   (a) 2 (b) 3 (c) 1 (d) None of these
7. Molecularity of the reaction: $N_2 + 3H_2 \longrightarrow$ 2NH3 is .....
8. Unit for rate constant of third order reaction is .....
9. Molecularity of the reaction: H_2 (g)+ I_2(g) $\longrightarrow$ 2HI(g) is .....

2023

1.The units of rate constant for second order reaction are……

2.The order of reaction for the rate expression; Rate = K $[A]^{\frac{3}{2}}$ $[B]^1$ is…….

3.What is Pseudo First order reactions. Give an example.

4.Calculate the half life period of a 1^{st} order reaction whose rate constant is 200 sec^{-1}.

5.The units of rate constant for first order reaction are……

6.The order of reaction for the rate expression; Rate = K $[A]^{1/2}$ $[B]^{3/2}$ is…….

7.The units of rate constant for Zero order reaction are……

8.The order of reaction for the rate expression; Rate = K $[A]^1$ $[B]^2$ is…….

2024

1. The unit of reaction rate constant are mol/L/sec. What is the order of this reaction?

(a) 2 (b) 0 (c) 1 (d) 4

2. Define Activation Energy?

3. The unit of reaction rate constant are mol^{-1} L/sec. What is the order of this reaction?

(a) 2 (b) 0 (c) 1 (d) 3

2025

1. How many columbs of electricity are requires for the oxidation of FeO to Fe_2O_3 :

(a) 289500C (b) 482500C (c) 96500C (d) none of these

2. Example of zero order reaction is:

(a) $CH_3CHO \longrightarrow CH_4 + CO$

(b) $2\ N\ H_3 \longrightarrow N_2 + 3H_2$

(c) $NO + O_3 \longrightarrow NO_2 + O_2$

(d) $N_2O_5 \longrightarrow NO_2 + 1/2\ O_2$

3. Calculate half life period of first order reaction if value of rate constant is equal to $200s^{-1}$.

4. Value of one faraday of electricity is approximately equal to:

(a) 96500 C (b) 96200 C (d) 96000 C (d) None of these.

5. The unit of rate constant for a zero order reaction is:

(a) mol/L/sec (b) sec^{-1} (c) L/ mol/sec (d) L^2/mol/sec

6. A reaction is found to be zero order will its molecularity be zero?

7. Define Rate Law.

8. The unit of rate constant for a first order reaction is:

(a) mol/L/sec (b) sec^{-1} (c) L/ mol/sec (d) L^2/mol/sec

QUESTION CARRY 2 MARKS

2018

1. Drive Integrate Rate law equation for First Order Reaction.

2. Differentiate between Order and Molecularity of the reaction.

2019

1.Define the following term :

(a) Activation Energy

(b) Collision Frequency

2.The rate constant K of a reaction increases four folds when the temperature changes from 300K to 320K. Calculate the energy of activation for this reaction.(Given : log 4 = 0.6021R = 8.314 J/K/Mol)

3.Define the following terms:

(a) Half-Life period

(b) Activated Complex

4.The rate of a chemical reaction doubles for an increase of 10K in absolute temperature from 298K. Calculate E_a (log 2 = 0.3010).

2021

1. A first order reaction is found to have rate constant K= $7.39x10^{-5}$ sec^{-1} . Find Half life of this reaction (log 2 =0.3010).

2. Derive integrated rate equation for zero order reaction.

3. At 373K, the half-life for thermal decomposition of N_2O_5 is 4.6 sec. and it is first order reaction . calculate specific rate constant at this temperature.
4.Derive integrated rate equation for first order reaction.
5. A first order reaction is found to have rate constant, K =5.5x 10^{-14} s^{-1}. Find half-life of the reaction.
6.Drive equation for half-life period for first order reaction.

2022

1.Calculate the half-life period of a 1^{st} order reaction where the specific rate constant is 4 $years^{-1}$.
2. Drive an expression for half-life period in case of 1^{st} order reaction.
3. Calculate the half-life period of the first order reaction where the specific rate constant is 2min^{-1}.
4. Drive integrated rate equation for first order reaction.

2023

1.Derive integrated rate equation for rate constant for zero order reaction.
2.What is first order reaction? Give an example.
3.Derive integrated rate equation for rate constant for first order reaction.
4.What is meant by half life time period of a reaction? Derive an expression for half-life tie period of a first order reaction.
5.Calculate the half-life period of a 1^{st} order reaction whose rate constant is 4 $years^{-1}$.
6.Calculate the half-life period of the first order reaction whose rate constant is 2min^{-1}

2024

1. A first order reaction is found to have a rate constant,K = 5.5x10^{-14} sec^{-1}. Find the half-life of the reaction.
2. Calculate half-life of a first order reaction whose rate constant is 200s^{-1}.

2025

1. Define the order of a reaction.
2. (a) What is half life period of a reaction?
   (b) What is pseudo –chemical reaction?
3. A first order reaction is found to have a rate constant, k = 5.5 x10^{-14} sec^{-1}. Find the half life of the reaction.
4. Calculate the half life period of the first order reaction (Rate constant = 4 $year^{-1}$).

UNIT 4 (D AND F BLOCK ELEMENTS)

QUESTION CARRY 1 MARKS

2018

1. Zn, Cd and Hg are soft. Why?
2. d-block elements form complexes. Why?
3. Define Transition Elements?
4. Give the general electronic configuration of f-block elements.
5. What are pseudohalogens?
6. Which does not belong to first transition series?
(a) Fe (b) Ag (c) V (d) Cu
7. Interhalogens are more reactive than Halogen. Why?
8. Which group of elements in modern periodic table is known as Chalcogens?
9. Cu(I) compounds are colourless whereas Cu(II) compounds are coloured. Why?
10.Many Transition elements act as good Catalyst. Why?
11.Explain the d-block elements form alloys?

2019

1. What is Misch metal?
2. Write the electronic configuration of Mn^{2+}.
3. Define transition elements?
4. Give the general electronic configuration of f-block elements.
5. Draw the structure of Dichromate ion.
6. Give the electronic configuration of Cu^{+}.
7. What are Coinage metals ?

8. Complete the reaction:

$K_2Cr_2O_7 \xrightarrow{\Delta}$

9. Why Zn, Cd and Hg is not regarded as transition metals?

2020

1.The electronic configuration of a transition element **X** in +3 oxidation state is [Ar] $3d^5$. What is its atomic number :

(a)25 (b) 26 (c)27 (d) 24

2.Which of the following block of elements do not come under transition elements:

(a)d-block (b) s-block (c) p-block (d) both (a) and (b)

3.The magnetic nature of elements depends on the presence of unpaired electrons. Identify the configuration of transition elements, which show highest magnetic moment:

(a) $3d^7$ (b) $3d^5$ (c) $3d^8$ (d) $3d^2$

4.Why electron gain enthalpy of fluorine is less than that of chlorine?

5.Why halogens have high electron gain enthalpy?

6.Why are halogens Coloured?

7.What are interhalogen compounds?

8.Why Flourine is the strongest oxidising agent?

9.What is the action of heat on $K_2Cr_2O_7$? Write reaction only.

10.Why the transition metals generally form interstitial compounds?

11.Why Hg is not regarded as transition element?

2021

1.What are interhalogen compounds?

2.Why interhalogen compounds are more reactive than component halogens?

3.Why Flourine usually show oxidation state of -1 ?

4.Why Noble gases are monoatomic in nature?

5.Why Halogens are coloured ?

6.Why noble gases have low melting point and boiling point.

2022

1.Which of the following has highest ionization enthalpy :

(a) P (b) N (c) As (d) Sb

2.General electronic configuration of group 16 elements is:

(a) $ns^2\ np^1$ (b) ns^2np^2 (c) ns^2np^4 (d) ns^2np^6

3.Maximum covalency of sulphur is :

(a) 2 (b) 4 (c) 6 (d) 5

4.Which of the following have maximum electron gain enthalpy:

(a) F (b) Cl (c) Br (d) I

5.General electronic configuration of group 18 elements is:

(a) $ns^2\ np^1$ (b) ns^2np^2 (c) ns^2np^3 (d) ns^2np^6

6.Why halogens are most reactive elements?

7.Why Hg is not regarded as transition element?

8.f-block elements involve progressive filling of:

(a) d-orbitals (b) s-orbitals (c) p-orbitals (d) f-orbitals

9.Why the transition metals generally form interstitial compounds?

10.Write the electronic configuration of Ce^{4+}ion.

11.Why Cd is not regarded as transition element.

12.Why transition metals and their compounds are known for catalytic activity?

13.Which of the following blocks of elements fall under inner transition elements?

(a) f-block (b) d-block (c) s-block (d) p-block

14.The first transition series Sc to Zn involve filling of:

(a) 3d-orbitals (b) 4d-orbitals (c) 4f-orbitals (d) none of these

2023

1.Which does not belong to first transition series?
(a)Fe (b) v (c) Ag (d) Cu
2.Write the Valence Shell Electronic Configuration of Lutetium.
3.Draw the structure of Permanganate ion.
4.The number of unpaired electrons in Ni^{2+} ion are:
(a)0 (b) 4 (c) 8 (d) 2
5.What are inner transition elements?
6.What is Lanthanoid Contraction?
7.Sc^{3+} ion is coloureless while Cr^{3+} ion is Coloured. Why?
8.Draw the structure of Manganate ion.
9.What are transition elements?
10.Why Zn^{2+} salts are white while Cu^{2+} salts are blue?
11.Which of the following is not a d-block elements:
(a) Hg (b) Po (c) Ni (d) W
12.The number of unpaired electrons in Fe^{3+} ion are:
(a) 2 (b) 4 (c) 5 (d) 3
13.Which does not belong to first transition series?
(a) Y (b) Tc (c) Cd (d) Cu
14.The number of unpaired electrons in Fe^{3+} ion are:
(a) 0 (b) 4 (c) 5 (d) 3

2024

1. The silver UK coins are an alloy of copper with :
(a) Silver (b) Aluminum (c) Nickel (d) Chromium
2. The first ionization enthalpy of Xenon is almost identical with that of :
(a) Molecular oxygen
(b) Molecular Nitrogen
(c) Molecular Fluorine
(d) Molecular Hydrogen
3. What is coinage metals? Write their names.
4. Why are melting point of transition metals very high?
5.What was the first compound of noble gases?
(a) $XeOFe_4$ (b) XeO_2F_2 (c) $XePtF_6$ (d) XeF_6
6.Which of the following has equal unpaired electrons with MAnganese (Z=25)?
(a) Zn^{2+} (b) Cu^{+} (c) Fe^{3+} (d) Fe^{2+}

2025

1. The number of unpaired electrons in Ni^{2+} is :
(a) 0 (b) 4 (c) 2 (d) 8
2. Why Zn,Cd and Hg are not regarded as transition metals?
3. What is the action of heat on potassium dichromate ?
4. Why transition metals form alloys?
5. Why it is difficult to separate lanthaanoid elements in pure state?
6. Why $La(OH)_3$ is more basic than $Lu(OH)_3$?
7. Heaviest transition metal is :
(a) Fe (b) Cu (c) Cr (d) Os
8. Why transition metals shows variable oxidation states?
9. What is the action of heat on $KMnO_4$?
10. The number of unpaired electrons in Fe^{2+} is :
(a) 0 (b) 4 (c) 2 (d) 8

QUESTION CARRY 2 MARKS

2018

1. Define Lanthanoid Contraction. Give its causes.

2. Most of the transition elements are coloured. Why?
3. Transition elements show variable oxidation states. Why?
4. Explain Variable Oxidation State of d-block elements?
5. Explain : (a) Ferromagnetism (b) Ferrimagnetism

2019

1. Why transition elements form coloured complexes?
2. What is Lanthanoid Contraction and write its consequences?
3. Why transition elements shows variable oxidation state?
4. Why transition metals act as good catalysts?
5. Why transition metals form alloys?
6. Indicate the steps in the preparation of $K_2Cr_2O_7$ from chromite ore .

2022

1.Copper is regarded as transition metal though it has completely filled d-orbital. Explain.
2.What are interstitial compounds? why are such compounds well known as transition metals?
3.Explain why many transition metals and their compounds act as good catalysts?
4.What are transition elements? Gives the general electronic configuration of transition elements.
5.Gold (Aurum) is regarded as transition metal though it has completely filled d-orbital. Explain.
6.What is lanthanoid contraction? What is its significance?
7.Why F-block elements placed at the bottom of the periodic table? Write general electronic configuration of f-block elements.
8.Why do the transition elements exhibit higher enthalpies of atomization?
9.Explain why transition metals generally form coloured compounds?

2023

1.The transition metals and their compounds act as good catalyst. Why?
2.The transition metals generally form coloured compound. Why?
3.Why transition metal shows variable oxidation state?

2024

1. Draw the structure of dichromate and chromate ion.

2025

1. (a) Why Zn^{2+} salts are white while Cu^{2+} salts are blue?
   (b) Nmae the coinage metals?
2. (a) Draw the structure of manganite ion.
   (b) Why transitions metals act as good catalysts?
3. What is Lanthanide contraction?What are its consequences?
4. (a) Why most of the compounds of transitions metals are paramagnetic in nature?
   (b) Out of Fe^{2+} and Fe^{3+} which ion has large number of unpaired electrons?

UNIT 5(COORDINATION CHEMISTRY)

QUESTION CARRY1 MARKS

2018

1. Draw the shape of ClF_3.
2. ClF_3 exists but FCl_3 does not. Why?
3. Molecular N_2 is unreactive. Why?
4. Draw the structure of XeF_4.
5. H_3PO_4 is Diprotic . Why?

2019

1. Draw the structure of XeF_2.

2020

1.Correct IUPAC name of coordination compound $[Co(NH_3)_6]Cl_3$ is:
(a) Hexamine cobalt(III) chloride
(b) Hexamine cobalt(II) chloride
(c) Hexamine cobalt(III) trichlorides
(d) None of these
2.Ammonia is regarded as a good complex agent. Explain why?

3.What is the basicity of H_3PO_2?
4.Draw the structure of $XeOF_4$.
5.Nitrogen exist as diatomic molecule and phosphorous exist as tetra atomic P_4. Explain**.**
6.On the basis of VBT explain the geometry and magnetic behaviour of $[Co(NH_3)_6]^{3+}$ complex ion.
7.Draw the structure of XeO_2F_2.
8.Write IUPAC name of $[Co(NH_3)_6]Cl_3$.
9.Why does OF_6 not exist but SF_6 exists?

2021

1. Draw the structure of XeF_4.

2022

1.Give the geometry of XeF_4 and XeF_6.
2.Draw the structure of $XeOF_4$.
3.The molecules which are non-super impossible on their mirror image are called :
(a) Chiral (b) Achiral (c) Anomers (d) none of these
4.The correct IUPAC name of coordination compound $[Co(NH_3)_5Cl]Cl_2$ is :
(a) Pentaammine Chloridocobalt(III) Chloride
(b) Chloridopentaammine cobalt (II) Chloride
(c) Pentaammine Chloridocobalt (II) Chloride
(d) None of these

2023

1.The correct oxidation number of Cr in $[Cr(H_2O)_6]^{3-}$ ion is :
(a) +6 (b) +3 (c) +1 (d) None of these.
2.Chlorophyll is the co-ordination compound of:
(a) Co (b) Mg (c) Fe (d) Ni
3.The correct oxidation number of Co in $[Co(CN)_6]^{3-}$ is :
(a) +2 (b) +1 (c) +4 (d) +3

2024

1. What is the IUPAC name of $K_3[Cr(C_2O_4)_3]$?
2. Draw the structure of H_3PO_2.
3. Why oxygen exist as O_2 whereas sulphur as S_8 ?
4. Explain the structure of XeO_3.

2025

1. Name the metal present in chlorophyll.
2. What is didentate ligand?
3. Write the IUPAC name of $[Co(NH_3)_6]Cl_3$.
4. What is chelating ligand?

QUESTION CARRY2 MARKS

2018

1.Discuss the Magnetic behaviour, Nature ,geometry of $[NiCl_4]^{2-}$ ion on the basis of VBT.
2.Discuss the geometry, nature and magnetic behaviour of $[Cr(NH_3)_6]^{+3}$ ion on the basis of VBT.
3.Discuss the geometry, nature and magnetic behaviour of $[Fe(CN)_6]^{4-}$ ion on the basis of VBT.
4. All the bonds in PCl_5 are not equivalent why?
5.SF_6 exist but OF_6 does not. why?

2019

1. On the basis of VBT explain the geometry and magnetic behaviour of $[NiCl_4]^{2-}$.
2. On the basis of VBT explain the geometry and magnetic behaviour of $[Cr(NH_3)_6]^{3+}$.
3. Draw the structure of XeF_6 and P_4O_6

2020

1.On the basis of valence bond theory explain the geometry and magnetic behaviour of $[NiCl_4]^{2-}$ complex ion.
2.Explain on the basis of valence bond theory, the geometry and hybridization of $[CoF_6]^{3-}$ ion.

2022

1.Explain on the basis of valence bond theory, the geometry and hybridization of $[NiCl_4]^{2-}$ ion.

2.Explain on the basis of valence bond theory, the geometry and hybridization of $[CoF_6]^{3-}$ ion.

2023

1.On the basis of VBT, explain the geometry and magnetic behaviour of $[NiCl_4]^{2-}$ ion.

2.On the basis of VBT, explain the geometry and magnetic behaviour of $[Co(NH)_6]^{3-}$ ion.

3.A solution of $[Ni(H_2O)_6]^{2+}$ is green but a solution of $[Ni(CN)_4]^{2-}$ is colourless. Why?

4.Explain on the basis of valence bond theory, the geometry and magnetic behaviour of $[CoF_6]^{3-}$ ion.

5.$[Cr(NH_3)_6]^{3+}$ is paramagnetic while $[Ni(CN)_4]^{2-}$ is diamagnetic. Explain why?

2024

1. On the basis of VBT , explain why is $[Cr(NH_3)_6]^{3+}$ paramagnetic while $[Ni(CN)_4]^{2-}$ diamagnetic?

2. On the basis of VBT explain that $[Ni(CN)_4]^{2-}$ ion with square planar structure is diamagnetic and the $[NiCl_4]^{2-}$ ion with tetrahedral geometry is paramagnetic .

2025

1. (a) What is activation energy?
   (b) What are photochemical reactions?
2. (a) What are ligands?
   (b) Write the IUPAC Name of $K_3[Co(C_2O_4)_3]$.
3.On the basis of VBT, explain the hybridization,geometry and magnetic behaviour of $[Fe(H_2O)_6]^{3+}$ ion.
4. Explain on the basis of valence bond theory, the geometry and hybridization of $[CoF_6]^{3-}$ ion.
5. On the basis of VBT, explain the geometry and magnetic behaviour of $[Co(NH)_6]^{3+}$ ion.

UNIT 6(HALOALKANES AND HALOARENES)

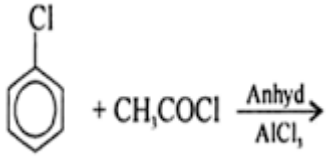
QUESTION CARRY1 MARKS

2018

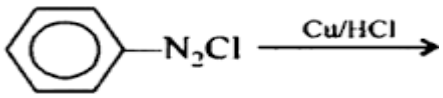
1. Explain Wurtz reaction.
2. Explain De-carboxylation Reaction.
3. What is Gattermann Reaction.

2019

1. Which metal is used in fitting reaction?
(a) Mg (b) Na (c) K (d) Fe
2. Write Wurtz-Fittig Reaction.
3. Define Saytzeff's Reaction.
4. State Anti-Markovnikov's rule.
5. Complete the reaction:



6. Complete the reaction:



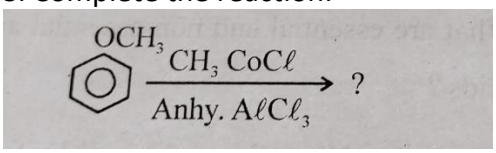
2020

1.Ar-Cl +Na+ Cl-R dry ether Ar-R + 2NaCl. The reaction is:
(a) Wurtz reaction
(b) Fittig reaction
(c) Finkelstein reaction
(d) Wurtz fitting reaction

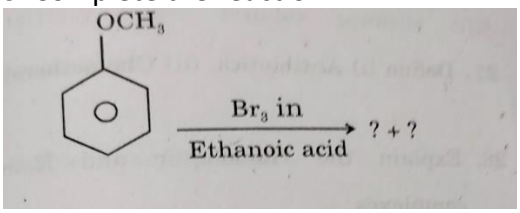
2. $2R\text{-}Cl + Na \xrightarrow{\text{acetone}} R\text{-}R + 2NaCl$. The reaction is :
(a) Wurtz reaction
(b) Fitting Reaction
(c)Finkelstein Reaction
(d)Frankland Reaction
3.Write IUPAC name of $K_3[Co(C_2O_4)_3]$
4.Write the following reactions only:
(a) Finkelstein reaction
(b) Friedel-crafts Alkylation reaction using chlorobenzene as a starting material.
5.Give the IUPAC name of the $CH_3CH(Cl)CH(Br)CH_3$.
6.Write Hoffmann Bromamide degradation reaction.
7.Write the reaction Sandmeyer reaction.
8.Write the reaction Friedel Crafts Alkylation reaction .
9.Give the IUPAC name of the compound $ClCH_2C \equiv CCH_2Br$
10.Write Cannizzaro's reaction.
11.Write Etard's reaction.

2022

1.Write the IUPAC Name isopropyl chloride.
2.Write a short note on Wurtz-fitting reaction.
3. Complete the reaction:



4.The carbon attached to halogens in haloalkane is:
(a) sp^2 hybridized
(b) sp^3 hybridized
(c) sp hybridized
(d) None of these
5. Complete the reaction:

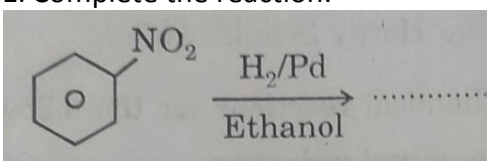


6.Define Markovnikov's Rule.
7. Which halogen compound undergo SN_1 reaction:
$C_6H_5CH_2\text{-}Br$ or $C_6H_5CH(C_6H_5)Br$?

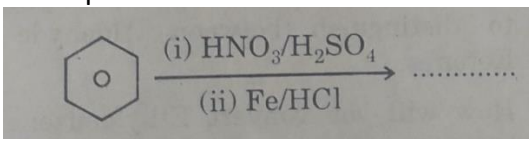
2023

1.Write IUPAC name of $CH_3-CH_2-N(CH_2CH_3)-CH_3$.

2. Complete the reaction:



3.Complete the reaction:



2024

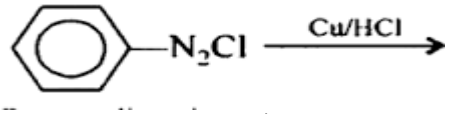
1. What is Wurtz Reaction?
2. Write the IUPAC name of H—C(=O)—H

2025

1. When an aqueous solution of benzenedia-azonium chloride is boiled with water or stream distilled the product formed is:

(a) benzene (b) diphenyl (c) chlorobenzene (d) phenol.

2. Complete the reaction:



3. $CH_3COOAg + Br_2 \xrightarrow{CCl4}$

The product of this reaction is :

(a) $CH_3CH_2Br + CO_2 + AgBr$

(b)$CH_3CH_2Cl + CO_2 + AgBr$

(c) $CH_3Cl + CO_2 + AgBr$

(d) (a) $CH_3Br + CO_2 + AgBr$

4. Assertion (A) : The reactivity of halogen acids with alcohols to form haloalkanes follows the order: HI>HBr>HCl

Reason(R): The nuceophilicity of halide ion increases as: $I^- < Br^- < Cl^-$

(a) Both (A) and (R) are true and (R) is correct explanation of (A).

(b) Both (A) and (R) are true and (R) is not correct explanation of (A).

(c) (A) is true but (R) is false.

(d) (A) is false but (R) is true.

QUESTION CARRY2 MARKS

2018

1. Why Haloarenes are less reactive than Haloalkanes?
2. Explain : (a) Sandmeyer's reaction
   (b) Williamson Synthesis
3. Explain why Haloalkanes give cyanide with KCN and isocyanide with AgCN ?.

2019

1. Write the chemical equation of :

(a) Coupling reaction

(b) Mendius Reaction

2020

1.Write Balz-Schiemann reaction.

2.Write Diazotisation reaction.

2022

1.Alkyl halides are extremely less reactive towards nucleophilic subsititution reactions. Why?

2.Although chlorine is an electron withdrawing group yrt it is ortho- , para- , directing in electrophilic aromatic substitution reactions. why?

3.Haloarenes are very slightly soluble in water. Why?

4.Why haloarenes are less reactive than haloalkanes towards the nucleophilic substitution reaction?
5.Describe Fitting Reaction by giviing example.
6.Why Aryl halides are otho-para directing towards electrophiles?
7.Describe Gabriel phthalimide synthesis.

2024

1. Why are haloarenes less reactive towards nucleophilic subsitution reactions?

2025

CASE STUDY QUESTIONS:

1. **Context:** A primary alkyl halide (A) C_4H_9Br reacted with alcoholic KOH to give compound (B). Compound(B) is reacted with HBr to give compound (C) which is an isomer of (A). When (A) reacted with sodium metal it gives a compound (D) C_8H_{18}.

Answer the following questions:

(a) Identify compounds A,B,C and D. (2)
(b) What is Markovnikov rule? Also write its example. (2)

2. **Context:** A chloro compound (A) on reduction with Zn-Cu and ethanol gives hydrocarbons (B) with two carbn atoms. When compound (A) is dissolved in dry ether and sodium metal it gives hydrocarbons with four carbons atoms? When compound(A) is treated with alcoholic KCN it gives compound (C).

Answer the following questions:

(a) Identify compounds A,B,C . (2)
(b) Write short note on Wurtz- reaction. Also write chemical equation. (2)

3. **Context:** The polarity of C-X bond of alkyl halide is responsible for their nucleophilic substitution, elimination and their reaction with metal atomto form organometallic compounds. Alkyl halides are prepared by the free radical halogenation of alkanes, addition of halogen acid to alkenes, replacement of OH group of alcohols with halogens using phosphorous halides, thionyl chloride or halogen acids. Aryl halides are prepared by electrophilic substitution of arenes. Nucleophilic substitution reactions are categorized into SN^1 and SN^2 on the basis of their kinetic properties.

Answer the following questions:

(a) What happens when bromobenzene is treated with Mg in the presence of dry ether? Also write the chemical reactions. (2)
(b) Write the chemical reaction for the preparation of 1- iodobutane from:
(i) 1-chlorobutane (ii) but-1-ene (2)

UNIT 7 (ALCOHOL, PHENOL AND ETHERS)

QUESTION CARRY 1 MARKS

2018

1. Dimethyl ether has less boiling point than ethyl alcohol. Why?
2. Convert Phenol into Salicylic Acid.

2019

1. Write Kolbe's reaction.
2.Convert ethyl alcohol into methyl alcohol.

2020

1.Which is simple ether among the following ethers:
(a) $C_2H_5OCH_3$ (b) CH_3OCH_3 (c) $C_6H_5OCH_3$ (d) None of these
2.Which of the following cannot be prepared by using Williamson's synthesis:
(a)Methoxybenzene
(b) Benzyl-p-nitrophenyl ether
(c) Methyl tert-butyl ether
(d) Di-tertiary butyl ether
3.What happen when phenol is treated with concentrated nitric acid? Give reaction.

2022

1.Convert chlorobenzene to phenol.
2.What happens when phenol is treated with dil. HNO_3 at low temperature (298K)

3.Complete the reaction:

$CH_3CH_2OH \xrightarrow{Cu/573K} ?$

4.How will you convert propan-1-ol into propan-2-ol.

5.Phenols are ..... acids than carboxylic acid.

6.Write chemical reaction for the preparation of phenol from chlorobenzene.

7.Give the test to distinguish between ethanol and ethanal.

8.The intermolecular H-Bonding in alcohols and phenols is due to.....group present in their molecules.

9.When an alcohol reacts with HCl in the presence of catalyst the turbidity appears within 5 minutes, it is a :

(a) 1^o Alcohol (b) 2^o Alcohol (c) 3^o Alcohol (d) none of these

2024

1.How will you convert butan-1-ol into butanoic acid? Give chemical reaction.

2. Complete the reaction:

$R\text{-}OH + ? \longrightarrow R\text{-}Cl + SO_2 + HCl$

3. Arrange the following compounds in order of their increasing boiling points:

(i) Pentan-1-ol (ii) Butan-1-ol (iii) Ethanol (iv) Methanol

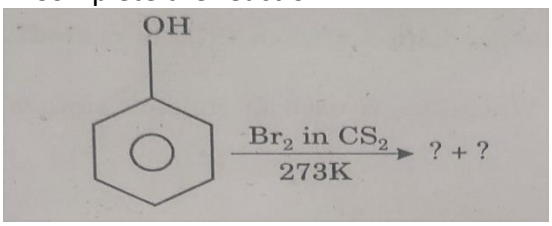
(a) (i), (ii), (iii), (iv)

(b) (ii), (iii), (iv), (i)

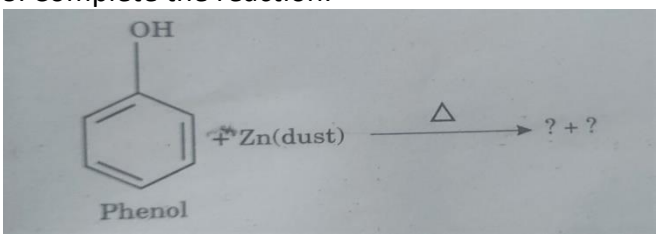
(c) (iv), (iii), (ii), (i)

(d) (iii), (iv), (i), (ii)

4. Complete the reaction:



5. Complete the reaction:



2025

1. Assertion (A) : Phenol is more acidic than ethanol

(Reason) : The phenoxide ion formed after loss of proton from phenol is stabilized by resonance, whereas the ethoxide ion is not.

(a) Both (A) and (R) are true and (R) is correct explanation of (A).

(b) Both (A) and (R) are true and (R) is not correct explanation of (A).

(c) (A) is true but (R) is false.

(d) (A) is false but (R) is true.

2. The correct order of increasing acidic strength is:

(a) phenol<ethanol<chloroacetic acid<acetic acid

(b) ethanol<phenol<chloroacetic aacid<acetic acid

(c) ethanol<phenol<acetic acid<chloroacetic acid

(d) chloroacetic acid<acetic acid<phenol<ethanol.

3. Write the IUPAC name of isopropyl alcohol.

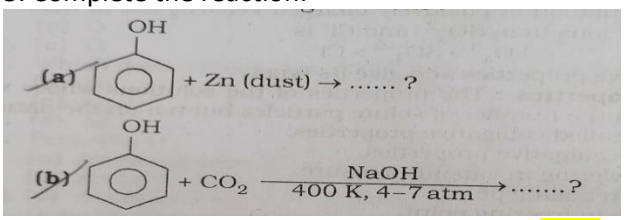
4. Write Kolbe's reaction.

5. Assertion (A) : Alcohols have high boiling point than hydrocarbons of comparable molecular mass.
Reason (R) : Alcohols form intermolecular hydrogen bond between their molecules.
(a) Both (A) and (R) are true and (R) is correct explanation of (A).
(b) Both (A) and (R) are true and (R) is not correct explanation of (A).
(c) (A) is true but (R) is false.
(d) (A) is false but (R) is true.
6. Why ethanol is miscible in water?

QUESTION CARRY2 MARKS

2018

1. Phenol are more acidic than Alcohols. Explain.
2. Distinguish between primary, secondary and tertiary alcohols with Lucas Test?
3. Complete the reaction:



2019

1. What happens when secondary alcohols are heated over copper at 573K? Give reaction.

2020

1.Why alcohol is less acidic than phenol?
2.Explain why propanol has higher boiling point than that of hydrocarbon butane?
3.Give Lucas chemical test to distinguish between primary, secondary and tertiary alcohol.
4.Give chemical test to distinguish between ethanol and acetic acid.

2022

1.Alcohols are weaker acids than water . Why?
2.Phenol is more acidic than alcohols. Why?
3.Why phenols are acidic in nature ?
4.Compare the acidic strength of phenol and ethanol.

2025

1. Explain why ethers are relatively unreactive as compared to alcohols?
2. Write the following:
(a) Williamson's synthesis reaction
(b) Kolbe's reaction.
3. (a) How will you distinguish between alcohols and phenols.
(b) How will you prepare phenol from chlorobenzene.
4. Why phenols are more acidic than aalcohols?
5. Write about the Reimer-Tiemann reaction.
6. (a) covnert ethanol into ethyl acohol.
(b) complete the reaction:
$CH_3CHO + 4[H] \longrightarrow$
7.Give dehydrogenation reaction of primary and secondary alcohol with copper at 573K.
8. With the help of Lucas test how will you distinguish between primary, secondary and tertiary alcohols? Also write the chemical reactions.
9. (a) complete the reaction:
$CH_3CHO + NH_2OH \longrightarrow$
(b) Identify A,B in the following reaction:
Phenol + $CHCl_3$ $\xrightarrow{NaOH}$ A $\xrightarrow{HCl}$ B

UNIT 8 (ALDEHYDES, KETONES AND CARBOXYLIC ACID)

QUESTION CARRY 1 MARKS

2018

1. Explain Reimer-Tiemann Reaction
2. Explain Rosenmund Reaction
3. Explain Cannizzaro Reaction.
4. Convert Acetic Acid into Formic Acid.
5. What is Gattermann Reaction.

2019

1. IUPAC name of formic acid is :

(a) Methanoic Acid (b) Ethanoic Acid (c) Methanedioic Acid (d) Ethanedioic Acid

2. IUPAC name of acetic acid :

(a) Ethanoic acid (b) Methanoic acid (c) Butanoic acid (d) Propanoic acid

2020

1.CH_3CHO and $C_6H_5CH_2CHO$ can be distinguished chemically by:

(a) Benedict's test (b) Iodoform test (c) Tollen's reagent test (d) Fehling's solution test

2.Write the following reaction :

(a) Cross aldol condensation reaction

(b) Rosenmund's reaction

3.Covert acetaldehyde to acetone

4.Distinguish between acetaldehyde and acetone?

5.Convert Formaldehyde to acetaldehyde.

6.How will you distinguish between Benzaldehyde and Acetone?

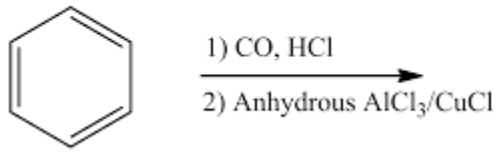
2022

1.Complete the reaction :

$CH_3COOH \xrightarrow{(i)LiAlH_4/ether\ (ii)\ H_2O}$?

2.Explain Rosenmund's reaction.

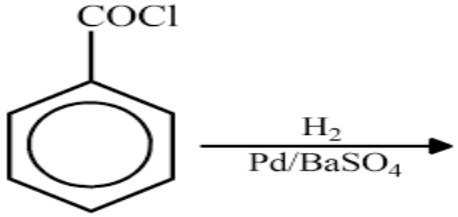
3. Complete the following reaction:



4. Complete the reaction:

$3CH_3COOH + PCl_3 \longrightarrow$?

5. Complete the reaction:



2023

1. Aldehydes are generally more reactive than ketones in nucleophilic addition reactions due to……. and …… reasons.

2024

1. What will be the product of following reaction:

$R\text{-}COONa \xrightarrow{NaOH + CaO,\ \Delta}$? + Na_2CO_3

(a) $R\text{-}CH_2OH$ (b) R-CHO (c) $R\text{-}CH_3$ (d) R-H

2. Arrange the following compounds in increasing order of their strength:
(i) 2,4,6-trinitrophenol
(ii) 3-nitrophenol
(iii) 3,5-dinitrophenol
(iv) 4-Methylphenol

(a) (i), (ii), (iii), (iv)
(b) (iv), (ii),(iii),,(i)
(c) (iii), (iv), (ii), (i)
(d) (ii), (i), (iii), (iv)

2025

1. IUPAC name of $CH_3CH=CHCHO$ is :
(a) but-3-3n-al (b) but-2-en-2-al (c) but-2-en-al (d) but-2-en-4-al.
2. Assertion (A) : Acetaldehyde undergoes aldol condensation with NaaOH .
Reason (R) : Aldehydes which do not contain alpha hydrogen undergoes aldol condensation.
(a) Both (A) and (R) are true and (R) is correct explanation of (A).
(b) Both (A) and (R) are true and (R) is not correct explanation of (A).
(c) (A) is true but (R) is false.
(d) (A) is false but (R) is true.
3. Assertion (A): Acetic acid but formic acid can be halogenated in the presence of red P and Cl_2.
Reason (R) : Acetic acid is a weaker acid than formic acid.
(a) Both (A) and (R) are true and (R) is correct explanation of (A).
(b) Both (A) and (R) are true and (R) is not correct explanation of (A).
(c) (A) is true but (R) is false.
(d) (A) is false but (R) is true.
4. Assertion(A): Carboxylic acid have higher boiling point than aldehydes and ketones of similar molecular masses.
Reason (R): Carboxylic acid form strong hydrogen bond in their molecules and form dimer.
(a) Both (A) and (R) are true and (R) is correct explanation of (A).
(b) Both (A) and (R) are true and (R) is not correct explanation of (A).
(c) (A) is true but (R) is false.
(d) (A) is false but (R) is true.

QUESTION CARRY2 MARKS

2018

1. Explain : Aldol Condensation and Coupling Reaction.
2. Explain: (a) Clemmensen's Reduction (b) Nitration of Benzaldehyde
3. Explain: (a) Hofmann Bromamide reaction (b) HVZ Reaction
4. (a) Give the reaction of CH_3CHO with NH_2OH .
(b) Explain the Wolf-Kishner Reduction.

2019

1. Give simple chemical test to distinguish between Pentan-2-one and Pentan-3-one.

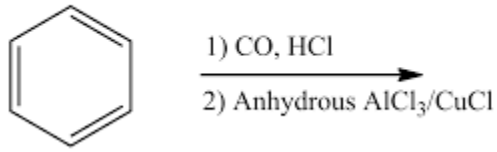
2020

1.Why Carboxylic acids are stronger acids than alcohols and phenols?

2025

1. Complete the following reactions:
(a) $CH_3COOH \xrightarrow{Cl_2/red\ P}$
(b) $CH_3CHO + H_2 \xrightarrow{Pt}$
2. Complete the reaction and identify compounds A and B:
$CH_3CHO + NH_2NH_2 \longrightarrow A \xrightarrow{KOH/453K} B$

3. Complete the reaction:
(a)



(b) $CH_3COCl + H_2 \xrightarrow{Pd/BaSO4}$

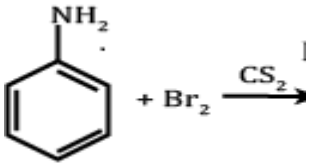
4. (a) Complete the reaction:
$2HCHO + NaOH\ (conc.) \longrightarrow$
(b) Convert Methanol into ethanol.

UNIT 9 (AMINES)

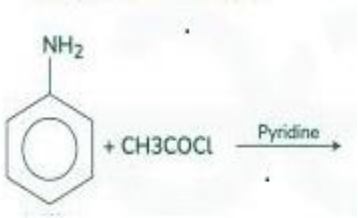
QUESTION CARRY1 MARKS

2018

1. What is Carbyl amine Reaction?
2. Explain ethylamine is more basic than Ammonia.
3. Convert ethylamine to methylamine.
4. Why Aniline is less basic than ethylamine ?
5. Why Primary amines have higher boiling point than Tertiary amines.
6. Why are alkyl amine are stronger base than aryl amines.
7. What is Diazotization Reaction?
8. $C_6H_5NH_2 + CHCl_3 + KOH \longrightarrow$ .....?
9. $RCONH_2 + Br_2 + 4KOH \longrightarrow$ .....?
10. Convert Aniline into Benzoic Acid.
11. Complete the reaction:



12. Complete the reaction:



2020

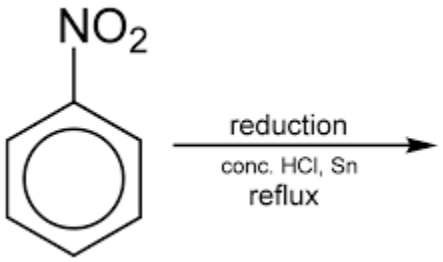
1.Choose the incorrect statements:
(a) Primary amines show internuclear hydrogen bonds
(b) Tert-butylamine is a primary amine
(c) Tertiary amine do not shows hydrogen bonds
(d) Isopropyl amine is a secondary amine
2.Which is the incorrect statement in the following:
(a) Methyl amine is more basic than ammonia
(b) Amines form hydrogen bonds
(c) Ethyl amine has higher boiling point than propane
(d) Dimethylamine is less basic than methylamine
3.What is zwitter ion?
4.Write Carbylamine reaction.
5.Write Ammonolysis reaction.

2022

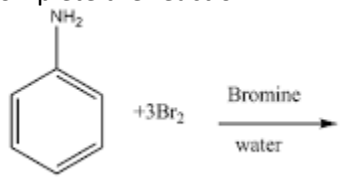
1.The amine $(C_2H_5)_2NH$ is a :

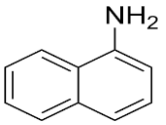
(a) 1° Amine (b) 2°Amine (c) 3° Amine (d) None of these

2. Complete the reaction:



3. Complete the reaction:



4. The Amine  is:

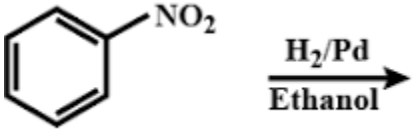
(a) Primary Amine

(b) Secondary Amine

(c) Tertiary Amine

(d) None of these

5. Complete the reaction:



2023

1.Aliphatic amines are ……. Basic than ammonia.

2.Formalin is 40% aqueous solution of…….

3.How will you convert Methanamine into Ethanamine?

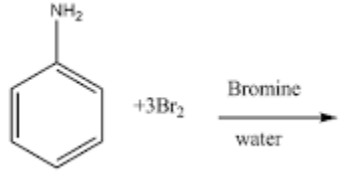
4.Give an example of primary amine and write its IUPAC name.

5.Give an example of tertiary amine and write its IUPAC name.

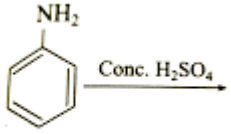
6.How will you convert ethanoic acid into methanamine?

7.Aromatic amines are …….. basic than ammonia.'

8.Complete the reaction:



9. Complete the reaction:



10. Complete the reaction :

$C_6H_5NH_2 + CHCl_3 + alc.KOH \longrightarrow A$?

2024

1.What is carbyl amine reaction?

2.Why ethyl amine is more basic than ammonia?

2025

1. Complete the reaction:

$CH_3CH_2Br + NH_3 \longrightarrow$ A $\xrightarrow{CH3CH3Br}$ B

2. What happens when ethylamine is treated with nitrous acid?
3. What happen when ethylamine react with Grignard reagent?
4. What happen when aniline is treated with nitrous acid?
5. What is Hinsberg reagent?
6. Complete the following reaction: $CH_3CH_2OH + NaH \longrightarrow$

QUESTION CARRY2 MARKS

2018

1.Explain the basicity of Primary, Secondary and Tertiary amines.

2019

1.Out of ethylamine and aniline which one is more basic and Why?

2.Why amines have higher boiling point than corresponding hydrocarbons?

2022

1.Write a test to distinguish between primary, secondary and tertiary amines.

2023

2.Why do primary amines have higher boiling point than tertiary amines?

3.Ethylamine is more basic than ammonia. Why?

2025

1. Why aniline is less basic than ethylamine ?
2. How will you distinguish between primary, secondary and tertiary amines?
3.Convert :

(a) Aniline to benzene diazonium chloride

(b) Aniline to phenol

(c) Ethylamine to ethanol.

4.Why aliphaticamines are more basic than ammonia?

5.convert:

(a) Aniline into benzene

(b) Ethanoic acid into methanamine.

6. Complete the following reaction:

(a) $C_2H_5NH_2 + C_6H_5Cl \xrightarrow{NaOH}$

(b) $CH_3CONH_2 + Br_2 + 4KOH \longrightarrow$

7. Identify A, B and C

$CH_3NH_2 + HONO \longrightarrow$ A $\xrightarrow{P/I}$ B $\xrightarrow{KCN}$ C

8. Write a short note on Carbylamine reaction.
9. Identify A,B and C and complete the reaction:

$CH_3OH + PCl_5 \longrightarrow$ A $\xrightarrow{KCN}$ B $\xrightarrow{REDUCTION}$ C

10. Why ethylamine is more basic than ammonia?
11. Complete the following reaction:

(a) $C_2H_5OH + NH_3 \xrightarrow{Al2O3}$

(b) Nitrobenzene + $3H_2 \longrightarrow$

12. Write a short note on coupling reaction.
13. Convert the following:

(a) Aniline into phenol

(b) Phenol into toluene

UNIT 10 (BIOMOLECULES)

QUESTION CARRY 1 MARKS

2018

1. Give Chemical name of Vitamin-A.
2. What is denaturation of Proteins?

2019

1. Which of the following is not present in the DNA:
(a) Adenine (b) Uracil (c) Cytosine (d) Guanine
2. Chlorophyll contains :
(a) Co (b) Fe (c) Mg (d) Zn
3. Give chemical name of Vitamin D.
4. Define Denaturation of protein?
5. Which of the following is not present in RNA?
(a) Thymine (b) Uracil (c) Cytosine (d) Guanine
6. Give Chemical name of Vitamin-A.

2020

1.Fructose is an example of:
(a) Monosaccharides
(b) Disaccharides
(c) Polysaccharides
(d) None of these
2.What are essential amino acids?
3.The chemical name of vitamin $B_6$is .....

2021

1. Deficiency of Vitamin C causes:
(a) Scurvy (b) Beri-Beri (c) Convulsions (d) Muscular Weakness

2022

1. The chemical name of vitamin $B_1$is .....
2. Which of the following is not present in DNA ?
(a) Adenine (b) Uracil (c) Cytosine (d) Guanine
3.The secondary structure of protein is stabilized by .....
4.Name the vitamin responsible for the coagulation of blood.
5.The chemical name of vitamin $B_2$is .....
6.Which of the following is not present in RNA ?
(a) Thamine (b) Uracil (c) Cytosine (d) Guanine
7.The enzyme that catalyses hydrolysis of maltose into glucose is .....
8.What are monosaccharides?
9.Fructose is an example of:
(a)Monosaccharides
(b)Disaccharides
(c)Polysaccharides
(d)None of these
10.The chemical name of vitamin $B_6$is .....
11.Starch is the example of :
(a) Monosaccharides
(b) Disaccharides
(c) Polysaccharides
(d) None of these

2024

1. Which of the following bases is not present in DNA?

(a) Adenine (b) Uracil (c) Cytosine (d) Guanine

2. The sugar present in RNA is:

(a) β-D-2-deoxyribose

(b) β-D-2(+)-Glucose

(c) β-D-ribose

(d)α-D-(+) Glucose

2025

1. What is inversion of sugar?
2. Name the enzyme present in saliva.
3. What is denaturation of protein?
4. What is peptide bond or linkage?
5. What is zwitter ion?
6. Write the chemical name of vitamin C.

QUESTION CARRY 2 MARKS

2018

1.Explain Primary and Secondary Structure of Proteins.

2.What are essential and non-essential Amino acids?

3. Differentiate between RNA and DNA.

2019

1.What are essential amino acids?

2020

1.Give one example of water soluble and fat soluble vitamins.

2.Why are Vitamin-A and Vitamin-C essential to us? Gives their important sources.

2022

1.What are essential and non- essential amino acids?

2.Differentiate between DNA and RNA.

3.Differentiate between fibrous protein and globular proteins.

2024

1. Write the important structural and functional differences between DNA and RNA.

2025

1. What are carbohydrates ? What are their important functions?
2. (a) Name the sweetest form of natural sugar.
   (b) Deficiency of which vitamin causes the diseases called bari-bari?
3. Write difference between fibrous protein and globular protein.