Chapter 1 Solutions

MULTIPLE CHOICE QUESTIONS

Assertion-Reason Questions

In the following questions a statement of assertion followed by a statement of reason is given . Choose the correct answer out of the following choice.

(a) Assertion and reason both are correct statements but reason is correct explanation for assertion.

(b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.

(c) Assertion is correct statements but reason is wrong statement.

(d) Assertion is wrong statement but reason is correct.

1. Assertion : Molarity of a solution in liquid state changes with temperature.
   Reason : The volume of a solution changes with change in temperature

2. Assertion : When NaCl is added to water a depression in freezing point is observed.
   Reason : The lowering of vapour pressure of a solution causes depression in the freezing point.

3. Assertion : When a solution is separated from the pure solvent by a semipermeabl membrane, the solvent molecules pass through it from pure solvent side to the solution side.
   Reason : Diffusion of solvent occurs from a region of high concentration solution to a region of low concentration solution.

4. Assertion : Molecular mass of polymers cannot be calculated using boiling point or freezing point methods.
   Reason : Polymers solution do not posses a constant boiling point or freezing point.

5. Assertion : Non-ideal solutions always from azeotropes.
   Reason : Boiling point of azeotrope may be higher or lower than boiling points of both components.

Q 6. What do you understand by the term K_f for water is 1.86 K kg mol^{-1}?

Ans 6. It means that the freezing point of water is lowered by 1.86 K when 1 mole of non-volatile solute is dissolved in 1 kg of water.

CHAPER 2

ELECTROCHEMISTY

1. A hypothetical electrochemical cell is shown below :

   AIA^+ (xM) II B^+ (yMI B

   The emf is measured is +0.20 V. The cell reaction is

(a) $A + B^+ \rightarrow A^+ + B$ (b) The cell reaction cannot be predicted.

(c) $A^+ + e^- \rightarrow A$, $B^+ + e \rightarrow B$ (d) $A^+ + B \rightarrow A + B^+$

2. A device that convert energy of combustion of fuels like hydrogen and methane directly into electrical energy is known as :

   (a) dynamo (b) Ni-Cd cell

   (c) fuel cell (d) electrolytic cell

3. Which of the following statement is not correct about an inert electrode in a cell ?

   (a) It does not participate in the cell reaction.

   (b) It provides surface either for oxidation or for reduction reaction.

   (c) It provides surface for conduction of electrons.

   (d) It provide surface for redox reactions.

4. Charge carried by 1 mole of electrons is

   (a) 6.023×10^{23} coulumb (b) 9.65×10^4 coulumb

   (d) 1.6×10^{-19} coulumb (d) 6.28×10^{19} coulumb

5. Which one of the following is always true about the spontaneous cell reaction in a galvanic cell ?

   (a) $E^0cell^o > G^0 <O, Q > Kc$ (a) $E^0cell <^O G^0 <O, Q < K_e$

   (c) $E^0cell^o > G^0 >O, Q > Kc$ (d) $E^0cell >^O G^0 <O, Q > K_e$

6. The electrode potentiall data is given below

   (a) $Fe^{3+} + e \rightarrow Fe^{2+}$, $E^0 = + 0.77$ V

   (b) $Al^{3+} + 3e \rightarrow Al$, $E^0 = - 1.66$ V

   (c) $Br_2 + 2e \rightarrow 2Br$, $E^0 = + 1.80$ V

Based on the data the reducing power of Fe^{2+}, All B_r^- will increase in the order.

(a) $Br^- < Fe^{2+} < AL$ (b) $Fe^{2+} < AL < Br^-$ (c) $AL < Br^- < Fe^{2+}$ (d) $AL < Fe^{2+} < Br^-$

7. The standard emf of a galvanic cell involving 3 moles of electrons in a redox reaction is 0.59 V. The equilibrium constant for the reaction of a cell is

   (a) 10^{10} (a) 10^{20} (a) 10^{30} (a) 10^{15}

8. 3 (NH_4H) is equal to $\wedge^o m$ (Nh_404)

   (a) (NH_4OH) + $\wedge^o$ (NH_4Cl) – $\wedge^o$ (HCl) (b) (NH_4Cl) + (NaOHl) – (NaCl)

   (c $\wedge^o$ (NH_4Cl) + $\wedge^o$ (NaCl) – $\wedge^o$ (NaOH) (d) (NaOH) + (NaCl) – (NH_2Cl)

9. E^0 cell m for some half reaction are given below. On the basis of these mark to correct answer.

   (a) $H^+ (aq) + e^- \rightarrow ½ H_2(g)$ E^0 cell = 0.00 V

   (b) $2H_2O (L) \rightarrow O_2(g) + 4H^+(aq) + 4e^-$ E^0 cell = 1.23 V

   (c) $2SO_4^{2}{}_+ (aq) \rightarrow S_2O^{2-}{}_8 (aq) + 2^-e$ E^0 cell = 1.96 V

1. Assertation (A) : Cu is less reactive than hydrogen

   Reason (R) : E^0 Cu2+ / Cu is negative.

2. Assertion (A) Mercury cell does not give steady potential.

   Reason (R) : In the cell reaction, ions are not involved in solution

3. Assertion (A) : Current stop flowing when Ecell = 0.

   Reason (R) : Equilibrium of the cell reaction is attained.

4. Assertion (A) : EA_g^+/A_g increases with increase in concentration of Ag^+ ions.

   Reason (R) : EA_g^+/A_g has a positive value

5. Assertion (A) : Copper Sulphate cannot be stored in zinc vessel.

   Reason (R) : Zinc is less reactive than copper.

6. Assertion (A) : Electrolysis of NaCl solution gives chlorine at anode instead of O_2.

   Reason (R) : Formulation of oxygen at anode requires overvoltage.

7. Assertion (A) : For measuring resistance of an ionic solution an AC source is used.

   Reason (R) : Concentration of ionic solution will change if DC source is used.

Chapter 3

CHEMICAL KINETICS

1. The role of a catalyst to change

   (a) gibbs energy of reaction (b) enthalpy of reaction

   (c) activation energy of reaction (d) equilibrium constant

2. In the presence of a catalyst, the heat evolved or absorbed during the reaction.

   (a) increases (b) decreases

   (c) remains unchanged (d) may increase or decrease

3. In the reaction

   BrO^-_3 (aq) + $5Br^-$(aq) + $6H^+ \rightarrow 3Br_2$(l) + $3H_2O$ (l)

   The rate of appearance of bromine is related to rate of disappearance of bromide ion as :

   (a) d [Br_2] / dt = -5 /3 d[Br^-] /dt (b) d [Br_2] / dt = 5 /3 d[Br^-] /dt

   (c) d [Br_2] / dt -= 3 /5 d[Br^-] /dt (d) d [Br_2] / dt = -3 /5 d[Br^-] /dt

4. The unit of rate constant of a zero order reaction is

   (a) litre $second^{-1}$ (b) litre $mole^{-1}$ $second^{-1}$

   (c) mole $litre^{-1}$ $second^{-1}$ (d) mole $second^{-1}$

5. The activation energy of a reaction can be determined from the slope of which of the following graphs ?

   (a) lnk Vs 1 /T (b) T/lnk Vs 1/T

   (c) lnk Vs T (d) lnk /T Vs T

6. If 75% of the first order reaction was completed in 32 minutes, 50% of the same reaction would be completed in :

   (a) 8 min (b) 4 min (c) 16 min (d) 24 min

7. A graph of volume of hydrogen released vs time for the reaction between zinc and dil. HCl is given in figure. On the basis of this mark the correct option.

   (a) Average rate upto 40 seconds is $V_3 – V_2$ / 40

   (a) Average rate upto 40 seconds is $V_3 – V_2$ / 40 -30

   (a) Average rate upto 40 seconds is V_3 / 40

   (d) Average rate upto 40 seconds is $V_3 – V_1$ / 40 -20

8. The rate constant of reaction is 2.0 x 10^{-6} $mol^{-2}L^2s^{-1}$. The order of the reaction is:

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

9. Diazonium salt decomposeas

   $C_6H_5N_2Cl \rightarrow C_6H_5Cl + N_2$ at 0^0C. The evolution of N_2 becomes two time faster when the initial concentration of the salt is doubled. Therefore it is :

(a) a first order reaction (b) a second order reaction

(c) independent of the initial concentration of the salt

(d) a zero order reaction

1. Assertion : Order of the reaction can be zero or fractional.
   Reason : We cannot determine order from balanced chemical equation.
2. Assertion : Order and molecurity are same.
   Reason : Order is determined experimentally and molecularity is the sum of the stoichiometric coefficient of rate determining elementary steps.
3. Assertion : The enthalpy of reaction remains constant in the presence of catalyst.
   Reason : A catalyst participating in the reaction, forms different activated complex and lowers down the activation energy but the difference in energy of reactant and product remains the same.
4. Assertion : The rate of reaction is the rate of change of concentration of a reaction or a product.
   Reason : Rate of reaction remains constant during the course of reaction.
5. Assertion : If the activation energy of a reaction is zero. Temperature will have no effect on the rate constant.
   Reason : Lower the activation energy, faster is the reaction
6. Assertion : For the reaction
   $2N_2O_5 \rightarrow 4NO_2 + O_2$ Rate = $k[N_2O_5]$
   Reason : Rate of decomposition of N_2O_5 is determined by slow step.
7. Assertion : Hydrolysis of cane sugar is a first order reaction.
   Reason : Water is present in large excess during hydrolysis.

Chapter 4

SURFACE CHEMISTRY

1. Which of the following relation is correct ?

   (i) x /m = Constant at high pressure

   (ii) x/m = Constant $xp^{1/n}$ (at intermediate pressure)

   (iii) x/m = Constant xp^{n} (at lower pressure)

   (a) All correct (b) All wrong (c) (i) and (ii) are correct (d) (iii) is correct

2. At the equilibrium position in the process of adsorption

   (a) $H > 0$ (b) $\Delta H = T\Delta S$ (c) $\Delta H > T\Delta S$ (d) $\Delta H < T\Delta S$

3. The term sorption stands for

   (a) absorption (b) adsorption (c) both absorption and adsorption

   (d) desorption

4. Extent of physiorption of a gas increases with

   (a) increase in temperature (b) decrease in temperature

   (c) decrease in surface area of adsorbent

   (d) decrease strength of Van der Waals forces

5. The emulsifying agent present in milk which makes it stable is :

   (a) maltose (b) casein (c) lactose (d) lactic bacilli

6. Physical adsorption of a gaseous species may change to chemical adsorption with

   (a) decrease in temperature (b) increase in temperature

   (c) increase in surface area of adsorbent

   (d) derease in surface area of adsorbent

7. Method by which lyophobic sol can be protected

   (a) By addition of oppositely charged sol. (b) By addition of an electrolyte

   (C) By addition of lyophilic sol. (d) By boiling

8. Freshly prepared precipitate sometimes gets converted to collidal solution by

   (a) coagulation (b) electrolysis (c) diffusion (d) peptisation

9. Which of the following electrolytes will have maximum coagulating value for AgI /Ag^{+} sol ?

   (a) Na_2S (b) Na_3PO_4 (c) Na_2SO_4 (d) NaCl

10. The values of colligative properties of colloidal solution are of small order in comparison to those shown by true solutions of same concentration because of colloidal particles.

    (a) exhibit enormous surface area (b) remains suspended in the dispersion medium

    (c) form lyophilic colloids (d) are comparatively less in number.

11. Which of the following process is responsible for the formation of delta at a place where rivers meet the sea ?

(a) Emulsification (b) Colloid formation (c) Coagulation (d) Peptisation

12. Draw of the curve for Freudlich adsorption isotherm?

13. Which of the following option are correct ?

(a) Micelle formation by soap in aqueous solution is possible at all temperature.

(b) Micelle formation by soap in aqueous solution occurs above a particular concentration.

(c) On dilution of soap solution micelles may revert to individual ions.

(d) Soap solution behaves as a normal strong electrolyte at all concentration.

14. Which of the following statements are correct about solid catalyst?

(a) Same reactants may give different product by using different catalysis.

(b) Catalyst does not change ΔH of reaction.

(c) Catalyst is required in large quantities to catalyse reactions.

(d) Catalytic activity of a solid catalyst does not depend upon the strength of chemisorption.

1. Assertion : An ordinary filter paper impregnated with collodion solution stops the flow of colloidal particles.

Reason : Pore size of the filter paper becomes more than the size of colloidal particle.

2. Assertion : Colloidal solutions show colligative properties.

Reason : Colloidal particles are large in size.

3. Assertion : Colloidal solutions do not show Brownian motion.

Reason : Brownian motion is responsible for stability fo sols.

4. Assertion : Coagulation power of Al^{3+} is more than Na^{+}.

Reason : Greater the valency of the flocculating ion added, greater is its power to cause precipitation (Hardy Schulze rule)

5. Assertion : Adsorption decreases with increasing temperature

Reason : Adsorption is generally temperature dependent.

6. Assertion : Milk is an example of water in oil emulsion.

Reason : Emulsion contains liquid dispersed in liquid.

7. Assertion : The relation $\frac{x}{m} = Kp^{1/n}$ is known as Freudlich adsorption isotherm, where x is the mass of gas absorbed by m grams of adsorbate, p is the equilibrium pressure, k and n are constants for given system and temperature.

Reason : When several substances have same value of l /n, the lines by which their adsorption isotherms can be represented will meet at a point.

Chapter 5

GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

1. In aluminothermic process, Al acts as
   (a) oxidizing agent (b) a flux (c) a reducing agent
   (d) a solder
2. Sulphide ores of metal are usually concentrated by froth floatation. Which one of the following sulphide ores is an exception and concentrated by leaching ?
   (a) copper pyrite (b) Argentite (c) Galena (d) Sphalerite
3. Electrolyte refining is used to purity which of the following metals ?
   (a) Cu and Zn (b) Ge and Si (c) Zr and Ti (d) Zn and Hg
4. Extraction of gold and silver involves leaching the metal with CN^- ion. The metal is recovered by
   (a) displacement of metal by some other metal from the complex ion.
   (b) roasting of metal complex (c) calcinations followed by roasting
   (d) thermal decomposition of metal complex.
5. Which of the following is not a basic flux ?
   (a) $CaCo_3$ (b) CaO (c) SiO_2 (d) MgO
6. Calamine is an ore of :
   (a) Cu (b) Fe (c) Zn (d) Al
7. In the extraction of aluminium by Hall-Heroult process purified Al_2O_3 is mixed with CaF_2 to
   (a) lower the melting poing of Al_2O_3.
   (b) increase the conductivity of molten mixure (c) reduce Al^{3+} into Al(s).
   (d) acts as a catalyst.
8. Which of the following options are correct?
   (a) Cast iron is obtained by remelting pig iron with scrap iron and coke using hot air blast.
   (b) In extraction of silver, silver is extracted as caitionic complex.
   (c) Nickel is purified by zone refining.
   (d) Zr and Ti are purified by Arkel method.

1. Assertion : Nickel can be purified by Mond process.
   Reason : $Ni(CO)_4$ is a volatile compound which decomposes at 460 K to give pure Ni.
2. Assertion : Ziroconium can be purified by Van Arkel method.
   Reason : ZrI_4 is volatile and decomposes at 1800 K.
3. Assertion : Sulphide ores are concentrated by Froth Floatation Method.
   Reason : Cresols stabilize the froth in Froth Floatation Method.
4. Assertion : Zone refining method is very useful for producing semiconductors.

Reason : Semiconductors are of high purity.

5. Assertion : Hydrometallurgy involves dissolving the ore in a suitable reagent followed by precipitation by a more electropositive metal.
   Reason : Copper is extracted by hydrometallurgy.
6. Assertion : Lead, tin and bismuth are purified by liquation method.
   Reason : Lead, tin and bismuth have low m.p as compared to impurities.
7. Assertion : Gold is recovered from its solution containing aurocyanide complex by adding zinc dust.
   Reason : Zinc is more electropositive than gold.
8. Assertion : Froth Flotation process is used to concentrate the ore argentite.
   Reason : Argentite is a sulphide ore.
9. Assertion : To obtain metal in a high degree of purity we use zone refining process for purification.
   Reason : During electrorefining pure metal is liberated at cathode.

Chapter -6

The p-BLOCK ELEMENTS

1. Which of the following is not tetrahedral in shape?

   (a) NH_4^+ (b) $SiCl_4$ (c) SF_4 (d) SO_4^2

2. Which of the following are peroxoacids of sulphur ?

   (a) H_2SO_4 and $H_2S_2O_8$ (b) H_2SO_5 and $H_2S_2O_7$

   (c) $H_2S_2O_7$ and $H_2S_2O_8$ (d) $H_2S_2O_6$ and $H_2S_2O_7$

3. The formation of O_2^+ $[Pt\ F_6]^-$ is the basis for the form atom of xenon fluorides. This is because

   (a) O_2 and Xe have comparable electro negativities

   (b) O_2 and Xe have comparable ionization energies

   (c) both O_2 and Xe are gases

   (d) O_2 and Xe are comparable gases

4. In the preparation of compound of Xe, Bartlett had taken $O^+_2Pt\ F^-_6$ as a base compound. This is because :

   (a) both O_2 and Xe have same size

   (b) both O_2 and Xe have same electron gain enthalpy.

   (c) both O_2 and Xe have almost same ionization enthalpy

   (d) both O_2 and Xe are gases.

5. The correct order of increasing bond angles in the following species is

   (a) $Cl_2O < ClO^-_2 < ClO_2$ (b) $ClO^-_2 < Cl_2O < ClO_2$

   (c) $Cl_2O < ClO_2 < ClO^-_2$ (d) $Cl_2O < ClO_2 < ClO^-_2$

6. Which of the following is isoelectronic pair ?

   (a) ICl_2, ClO_2 . (b) BrO^-_2, BrF^+_2

   (c) ClO_2, BrF (d) CN^-, O_3

7. The set with correct order of acidity :

   (a) $HClO < HClO_2 < HClO_3 < HClO_4$ (b) $HClO_4 < HClO_3 < HClO_2 < HClO$

   (c) $HClO < HClO_4 < HClO_3 < HClO_2$ (d) $HClO_4 < HClO_2 < HClO_3 < HClO$

8. In which of the following pairs the two species are isostructural ?

   (a) SF_4 and XeF_4 (b) BF_3 and NF_3

   (c) BrO^-_3 and XeO_3 (d) SO_3^{2-} and NO^-_3

9. Which of the following statement is not true for helium ?

   (a) 2l is used in gas cooked nuclear reactors

   (b) 2l is used as cryogenic agent for carrying out experiments at low temperature.

   (c) 2l is use to fill gas ballons instead of hydrogen be cause it is lighters then hydrogen and non-inflammable.

(d) 2t is used as a diluent for oxygen in modern diving apparatuses.

10. Two types of F x F angles are present in which of the following molecules(X=S, Xe, C)

(a) SX_4 (b) CF_4 (c) XeF_4 (d) SF_4

11. If chlorine gas is passed through hot NaOH solution, two changes are observed in the oxidation number of chlorine during the reaction. These are……and …….

(a) 0 to +5 (b) 0 to +3 (c) 0 to -1 (d) 0 to +1

12. Which of the following options are not in accordance with the property mentioned against them ?

(a) $F_2 > Cl_2 > Br_2 > I_2$ oxidising power

(b) MI > MBr > MCI > MF Ionic character of metal halide.

(c) $F_2 > Cl_2 > Br_2 > I_2$ Bond dissociation enthalpy

(d) HI < HBr < HCl < HF Hydrogen halogen bond strength

1. Assertion : Hydrolysis of XeF_6 is an example of a redox reaction

Reason : XeF_6 when hydrolysed yields $XeOF_4$ and XeO_2F_2

2. Assertion : The O-O bond length in ozone is identical with that in molecular oxygen

Reason : The ozone molecule is a resonance hybrid of two canonical structures.

3. Assertion : HI cannot be prepared by the action of conc. H_2SO_4 on KI.

Reason : HI is more volatile than H_2SO_4

4. Assertion : Boric acid behaves as a weak monobasis acid.

Reason : Boric acid contains hydrogen bonds in its structure.

5. Assertion : HCIO is stronger acid than HBrO.

Reason : Greater is the electronegativity of the halogen, greater will attraction of electron pair towards it and hence more easily the H^+ ion will be released.

6. Assertion : SO_3 has a planer structure

Reason : S atom in SO_3 is sp^2 hybridized and O-S-O bond angle is 120^0.

7. Assertion : Salts of ClO^-_3 and ClO^-_4 are well known but those of FO^-_3 and FO^-_4 are non existent.

Reason : F is more electronegative than O while Cl is less electronegative than O

8. Assertion : Both rhombic and monoclinic sulphur exist as S_8 but oxygen exists as O_2.

Reason : Oxygen forms pπ – p π multiple bond due to small size and small bond lengths but p π – p π bonding is not possible in sulphur.

9. Assertion : NaCl reacts with concentrated H_2SO_4 to give colourless fumes with pungent smell. But on adding MnO_2 the fumes become greenish yellow.

Reason : MnO_2 oxidises HCl to chlorine gas which is greenish yellow.

10. Assertion : SF_6 cannot be hydrolysed but SF_4 can be

Reason : Six F atoms in SF_6 prevent the attack of H_2O on sulphur atom of SF_6.

Chaper – 7

The d and f Blocks Elements

1. The electronic configuration of Cu(II) is $3d^9$ whereas that of Cu(I) is $3d^{10}$. Which of the following is correct ?
   (a) Cu (II) is more stable (b) Cu (II) in less stable
   (c) CU(I) and Cu (II) are equally stable
   (d) Stability of Cu(I) and Cu (II) depends on nature of copper salts.
2. Generally transition elements form coloured salts due to the presence of unpaired electrons. Which of the following compounds will be coloured in solid state ?
   (a) Ag_2SO_4 (b) CuF_2 (c) ZnF_2 (d) Cu_2Cl_2
3. Which of the following statement about transition element is not correct ?
   (a) They show variable oxidation states.
   (b) They exhibit diamagnetic and paramagnetic properties.
   (c) All ions are coloured
   (d) They exhibit catalytic property.
4. Which of the following reactions are disproportionation reactions ?
   (a) $Cu^+ \rightarrow Cu^{2+} + Cu$ (b) $3MnO^{2-}_4 + 4H^+ \rightarrow 2\ MnO^-_4 + MnO_2 + 2H_2O$
   (c) $2KMnO_4 \rightarrow K_2MnO_4 + MnO_2 + O_2$
   (d) $2MnO^-_4 + 3\ Mn^{2+} + 2H_2O \rightarrow 5MnO_2 + 4H^+$
5. Which one of the following statement does not correctly represent the correct order of the property indicated against it ?
   (a) Ti < V < Cr < Mn, increasing number of oxidation states
   (b) Ti < V < Mn < Cr, increasing second ionization enthalpy
   (c) Ti < V < Cr < Mn increasing melting point
   (d) $Ti^{3+} < V^{3+} < Cr^{3+} < Mn^{3+}$, increasing magnetic moment.
6. Gadolinium belong to 4f series. Its atomic number is 64. Which of the following is the correct electronic configuration of gadolinium ?
   (a) (Xe) $4f^7\ 5d^1\ 6s^2$ (b) (Xe) $4f^6\ 5d^2\ 6s^2$ (c) (Xe) $4f^8\ 6d^2$
   (d) (Xe) $4f^9\ 5s^1$
7. Identify the incorrect statement among the following
   (a) Lanthanoid contraction is the accumulation of successive shrinkages.
   (b) There is a decrease in the radii of the atoms or ions as one proceeds from La to Lu.
   (c) As a result of lanthanoid contraction, the properties of 4d series of the transition elements have no similarities with the 5d series of elements.
   (d) Shielding power of 4f electrons is quite weak

8. The magnetic moment is associated with its spin angular momentum and orbital angular momentum. Spin only magnetic moment value of Cr^{3+} ion is

(a) 2.87 B.M. (b) 3.87 B.M. (c) 3.47 B.M (d) 3.57 B.M.

9. Which of the following statements is not correct ?

(a) Copper liberates hydrogen from acids.

(b) In its higher oxidation states, manganese forms stable compounds with oxygen and fluorine.

(c) Mn^{3+} and Co^{3+} are oxidizing agents in aqueous solution.

(d) Ti^{2+} and Cr^{2+} are reducing agents in aqueous solution.

10. Actinoides exhibit greater number of oxidation states than lanthanoids. The main reason being

(a) more energy difference between 5f and 6d than between 4f and 5f orbitals.

(b) 4f orbitals are more diffused than the 5f orbitals.

(c) lesser energy difference between 5f and 6d than between 4f and 5f orbitals.

(d) more reactive nature of the actinoids than the lanthanoids.

11. Generally transition elements and their salts are coloured due to the presence of unpaired electrons in metal ions. Which of the following compound are coloured ?

(a) $KMnO_4$ (b) $Ce(SO_4)_2$ (c) $TiCl_4$ (d) Cu_2Cl_2

1. Assertion : Members of 4d and 5d series of transition elements have nearly same atomic radii.

Reason : Atomic and ionic radii for transition elements are smaller than their corresponding s-block elements.

2. Assertion : A solution of ferric chloride on standing gives a brown precipitate.

Reason : $FeCl_3$ posses covalent bonds and chlorine bridge structure.

3. Assertion : Transition metails form complexes.

Reason : Transition metals have unpaired electrons.

4. Assertion : Ce^{4+} is used as an oxidizing agent in volumetric analysis.

Reason : Ce^{4+} has the tendency of attaining +3 oxidation state.

5. Assertion : In transition elements ns orbital is filled up first and $(n-1)^d$ afterwards, during ionization ns electrons are lost prior to (n-1) electrons.

Reason :- The effective nuclear charge felt by (n-1)d electrons is higher as compared to that by ns electrons.

6. Assertion : Amongst Cu^{2+} and Cu^{+} ions, more stable ions is Cu^{2+}.

Reason : For determination of stability of an ion its electrode potential is more important factor than its electronic configuration.

7. Assertion : Zn, Cd and Hg cannot be regarded as transition elements.

Reason : These elements do not belong to d-block of the periodic table.

8. Assertion : The most common oxidation state exhibited by actinoids is +2.

Reason : All actinoids posses two electrons in 7 s subshell.

Chapter – 8

COORDINATION COMPOUNDS

1. The correct IUPAC name of $(Pt(NH_3)_2Cl_2)$ is

   (a) diamminedichloridoplatnium (II) (b) diamminedichlorideoplatinum (IV)

   (c) diamminedichloridoplatnium (0) (d) dichloridodiammineplatinum (IV)

2. The stabilsation of coordination compounds due to chelation is called the chelate effect, which of the following is the most stable complex species ?

   (a) $[Fe(CO)_5]$ (b) $[Fe(CN)_6]^{3-}$ (c) $[Fe(C_2O_4)_3]^{3-}$ (d) $[Fe(H_2O)_6]^{3+}$

3. Indicate the complex ion which shows geometrical isomerism.

   (a) $[Cr(H_2O)_4Cl_2]+$ (b) $[Pt(NH_3)_3Cl]$ (c) $[CO(NH_3)_6]^{3+}$

   (d) $[CO(CN)_5(NC)]^{3-}$

4. The CFSE for octahedral $[CoCl_6]^{4-}$ is 18000 cm^{-1}. The CFSE for tetrahedral $[CoCl_4]^{2-}$ will be

   (a) 18000 cm^{-1} (b) 16000 cm^{-1} (c) 8000 cm^{-1} (a) 20000 cm^{-1}

5. Due to the presence of ambidentate ligands coordination compounds show isomerism. Palladium complex of the type $[Pd(C_6H_5)_2(SCN)_2]$ and $[Pd(C_6H_5)_2(NCS)_2]$ are

   (a) linkage isomers (b) coordination isomers (c) ionization isomers

   (d) geometrical isomers

6. Crystal field stabilization energy for high spin d^4 octahedral complex is

   (a) $-1.6\ \Delta_0 + P$ (b) $-1.80\Delta_0$ (c) $-1.2\Delta_0$ (d) $-0.6\Delta_0$

7. Which of the following species is not expected to be a ligand ?

   (a) NO (b) NH^+_4 (c) $Nh_2CH_2CH_2NH_2$ (d) CO

8. Which of the following statement is correct ?

   (a) Higher CFSE favours formation of high spin complex.

   (b) Lower CFSE favours formation of low spin complex

   (c) t^{28} orbital are three fold degenerate whereas eg orbitals are two fold degenerate.

   (d) A particular metal ion in a particular oxidation state can form either diamagnetic complexes only or paramagnetic complex only.

9. The geometry of $Ni(CO)_4$ and $[Ni(PPh_3)_2Cl_2]$ are

   (a) both square planar (b) tetrahedral and square planer, respectively

   (c) both tetrahedral (d) square planar and tetrahedral, respectively.

10. Which of the following is π acid ligand ?

    (a) NH_3 (b) CO (c) F^- (d) ethylenediammine

11. Ziegler-Natta catalyst is $TiCl_4$ dissolved in

    (a) triethylaluminium (b) ether (c) water (d) ammonia

12. Atomic number of Mn, Fe and Co are 25, 26 and 27 respectively. Which of the following inner orbital octahedral complex ions are diamagnetic?

(a) $[Co(NH_3)_6]^{3+}$ (b) $[Mn(CN)_6]^{3-}$ (c) $[Fe(CN)_6]^{4-}$ (d) $[Fe(CN)_6]^{3-}$

13. Atomic number of Mn, Fe and Co are 25, 26 and 27 respectively. Which of the following outer orbital octahedral complexes have same number of unpaired electrons?

(a) $[MnCl_6]^{3-}$ (b) $[FeF_6]^{3-}$ (c) $[CoF_6]^{3-}$ (d) $[Ni(NH_3)_6]^{2+}$

1. Assertion : Toxic metal ions are removed by the chelating ligands.

   Reason :- Chelate complexes tend to be more stable.

2. Assertion :- Linkage isomerism arises in coordination compounds containing ambidentate ligand.

   Reason : Ambidentate ligand has two different donor atoms.

3. Assertion : Complexes of MX_6, MX_5L type (X and L are unidentate) do not show geometrical isomerism.

   Reason : Geometrical isomerism is not shown by complexes of coordination number 6.

4. Assertion : $[Fe(CN)_6]^{3-}$ ion shows magnetic moment corresponding to two unpaired electrons.

   Reason : Because it has d^2sp^3 type hybridization.

5. Assertion : $[Ni(CN)_4]^{2-}$ is square planar and diamagnetic

   Reason : It has no unpaired electrons due to presence of strong ligand.

6. Assertion : Oxalate ion is a bidentate ligand.

   Reason : Oxalate ion has two donor atoms

7. Assertion : $[Ni(CO)_4]$ has square planar geometry while $[Ni(CN)_4]^{4-}$ has tetrahedral geometry

   Reason : Geometry of any complex depends upon the nature of ligands attached.

8. Assertion : $[FeF_6]^{3-}$ is a low spin complex.

   Reason : Low spin complexes have lesser number of unpaired electrons.

9. Assertion : F^- ion is weak ligand and forms outer orbital complex.

   Reason : F^- ion cannot be force the electrons of d_z2 and $dx^2 – y^2$ orbitals of the inner shell to occupy $d_{xy}d_{yz}$ and d_{zx} orbitals of the same shell.

Class XII

Chemistry (JSV)

Chapter 9

HALOALKANES AND HALOARENES

1. The order of reactivity of following alcohols with halogen acids is

   (A) $CH_3 - CH_2 - CH_2 - OH$ (B) $CH_3CH_2 \underset{CH_3}{CH} OH$

   (C) $CH_3CH_2 \underset{CH_3}{\overset{}{C}} OH$

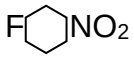
   (a) (A) > (B) > (C) (b) (C) > (B) > (C)

   (c) (B) > (A) > (C) (d) (A) > (C) > (B)

2. Two possible stereo-structure of CH_3 CH(OH)COOH which are optically active are called

   (a) mesomers (b) enantiomers (c) diastereomers (d) atrop isomers

3. The IUPAC name of compound

   CH_3 is

   (a) 4-fluro-1-methyl-3nitrobenzene (b) 1-fluro-4-methyl-2-nitrobenzene

   (c) 2-fluro-5-methyl-1-nitrobenzene (d) 4-methyl-1-fluoro-2-nitrobenzene

4. Which reagent will you use for the following reaction ?

   $CH_3CH_2CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_2Cl + CH_3CH_2CHClCH_3$

   (a) Cl_2 / UV light (b) NaCl + H_2SO_4 (c) Cl_2 gas in dark

   (d) Cl_2 gas in the presence of iron in dark

5. Which of the following is an example of vlc-dihalide ?

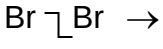
   (a) Dichloromethane (b) 1,2-dichloroethane

   (c) Ethylidene chloride (d) Allyl chloride

6. Chlorobenzene is formed by reaction of chlorine with benzene in the presence of $AlCl_3$. Which of the following species attacks the benzene ring in this reaction ?

   (a) Cl^- (b) Cl^+ (c) $AlCl_3$ (d) $[AlCl_4]^-$

7. The reagents for the following conversion is / are

   (a) Zn / CH_3OH (b) alcoholic KOH followed by $NaNH_2$

   (c) aqueous KOH followed by $NaNH_2$ (d) alcoholic KOH

8. Alkyl halides undergoing nucleophillic biomolecular substitution involve

(a) retention of configuration (b) racemic mixture

(c) inversion of configuration (d) formation of carbocation

9. Haloalkanes contain halogen atom(s) attached to the Sp^3 hybridised carbon atom of an alkyl group. Identify haloalkane from the following compounds.

(a) 2-Bromopethane (b) Vinyl chloride (chlorethane)

(c) 2-Chloroacetophenone (d) Trichloromethane

1. Assertion : Phosphorus chloride (tri and penta) are preferred over thionyl chloride for the preparation of alkyl chloride from alcohols.

Reason : Phosphorus chlorides give pure alkyl halides.

2. Assertion : KCN reacts with methyl chloride to give methyl isocyanide

Reason : CN^- is an ambident nuclephile

3. Assertion : tert-Butyl bromide undergoes Wurtz reaction to give 2, 2, 3, 3-tetramethylbutane.

Reason : In Wurtz reaction, alkyl halides react with sodium in dry ether to give hydrocarbon containing double the number of carbon atoms present in the halide.

4. Assertion : Presence of nitro group at ortho or para position increases the reactivity of halogens towards nucleophilic substitution.

Reason : Nitro group, being an electron withdrawing group decrease the electron density over the benzene ring.

5. Assertion : In monohaloarenes, further electrophilic substitution occurs at ortho and para positions.

Reason : Halogen atom is a ring deactivator.

6. Assertion : It is difficult to replace chlorine by –OH in chlorobenzene in comparison to that in chloroethane

Reason : Chlorine-carbon (C-Cl) bond in chlorobenzene has a partial double bond character due to resonance.

7. Assertion : Hydrolysis of (-) 2-bromoctane proceeds with inversion of configuration.

Reason : This reaction proceeds through the formation of carbocation.

8. Assertion : Nitration of chlorobenzene leads to the formation of m-nitrochlorobenzene

Reason : $-NO_2$ group is a m-directing group.

Chapter 10

Alcohols, Phenols and Ethers

1. How many alcohols with molecular formula $C_4H_{10}O$ are chiral in nature ?

(a) 1 (b) 2 (c) 3 (d) 4

2. What is the correct order of reactivity of alcohols in the following reactions. ?

$R\ OH\ + HCl \rightarrow ZnCl_2\ R - Cl\ + H_2O$

(a) $1^0 > 3^0 > \backslash 3^0$ (b) $1^0 < 2^0 > 3^0$ (c) $3^0 > 2^0 > 1^0$ (d) $3^0 > 1^0 > 2^0$

3. CH_3CH_2OH can be converted into CH_3CHO by

(a) catalytic hydrogenation (b) treatment with $LiAlH_4$

(c) treatment with pyridinium (d) treatment with $KMnO_4$

4. The electrophile involved in the above reaction is :

(a) ^+CHO (b) $^+CHCl_2$ (c) $^-CCl_3$ (d) $:CCl_2$

5. IUPAC name of the compound $CH_3\ CH\ OCH_3$ is

CH_3

(a) 1-methoxy-1-methylethane (b) 2-methoxy-2-methylethane

(c) 2-methoxypropane (d) isopropylmethyl ether

6. Which of the following species can act as the strongest base?

(a) OH (b) OR (C) OC_6H_5 (d) $^-O-$  NO_2

7. Phenol is less acidic than

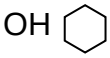
(a) ethanol (b) 0-nitrophenol (c) o-methylphenol (d) o-methoxyphenol

8. Which is the correct order of acid strength of the following

(a) $C_6H_5OH > H_2O > ROH > HC = CH$ (b) $C_6H_5OH > ROH > H_2O > HC = CH$

(c) $C_6H_5OH > HC = CH > H_2O > ROH$ (d) $C_6H_5OH > H_2O > HC = CH > ROH$

9. Mark the correct order of decreasing acid strength of the following compound


OH


OH

NO_2


OH

OCH_3


OH

NO_2


OH

OCH_3

10. The compound that reacts fastest with Lucas reagent at room temperature is

(a) butan 1-ol (b) butan 2-ol (c) 2-methyl propan 1-ol

(d) 2-methyl propan 2-ol

11. Which of the following compound is oxidized to methyl ethyl ketone ?

(a) 2-Propanol (b) 1-Butanol (c) 2-Butanol (d) tert Butyl alcohol

12. An alcohol on oxidation is found to give CH_3COOH and CH_3CH_2COOH. The structure of the alcohol is

(a) $CH_3CH_2CH_2OH$ (b) $(CH_3)_2C(OH)CH_2\ CH_3$

(c) $CH_3(CH_2)_3CH_2OH$ (d) $CH_2CHOHCH_2CH_2CH_3$

13.` In the reaction given below, X is Neopentylalcohol H_2SO_4

(a) 2-methyl pent 2-ene (b) 2-methy l pentane

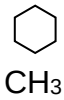
(c) 2-methyl but 2-ene (d) neopentane

1. Assertion : In lucas test 3^0 alcohols react immediately
   Reason : An equimolar mixture of anhyd. $ZnCl_2$ and conc. HCl is called Lucas reagent.
2. Assertion : p-nitrophenol is more acidic than phenol
   Reason : Nitro group helps in the stablisation of the phenoxide ion by dispersal of negative charge due to resonance.
3. Assertion : Bond angle in ethers is slightly less than the tetrahedral angle.
   Reason : There is a repulsion between the two bulky (-R) groups.
4. Assertion : Phenol is more reactive than benzene towards electrophilic substitution reaction.
   Reason : In the case of phenol, the intermediate carbocation is more resonance stabilized.
5. Assertion : Like bromination of benzene, bromination of phenol is also carried out in the presence of Lewis acid.
   Reason : Lewis acid polarizes the bromine molelcule.
6. Assertion : o-Nitrophenol is less soluble in water than the m-and p-isomers
   Reason : m and p-Nitrophenols exist as associated molecules.
7. Assertion : Ethanol is a weaker acid than phenol.
   Reason : Sodium ethoxide may be prepared by the reaction of ethanol with aqueous NaOH
8. Assertion : Phenol on oxidation with KMnO4 gives meso-tartic acid
   Reason : Pure phenol is colourless but turn pink due to oxidation to phenoquinone.
9. Assertion : Phenols give o- and p-nitrophenol on nitration with conc. HNO_3 and H_2SO_4 mixture.
   Reason : -OH group in phenol is 0 p-directing
10. Assertion : Phenol is more reactive than benzene towards electrophilic substitution reaction.
    Reason : In the case of phenol, the intermediate carbocation is more resonance stabilized.
11. Assertion : In Lucas test, 3^0 alcohols react immediately.
    Reason : An equimolar mixture of anhyd. $ZnCl_2$ and conc. HCl is called Lucas regent.
12. Assertion : Ethers behave as bases in the presence of mineral acids.
    Reason : Due to the presence of lone pairs of electrons on oxygen.

Chapter – 11

Aldehydes, Ketones and Carboxylic Acids

1. Cannizzaro's reaction is not given by

(a)  (b)  (c) HCHO (d) CH_3CHO

3. Structure of A and type of isomerism in the above reaction are respectively.

(a) Prop 1-en-2-ol, metamerism (b) Prop-1-en-1-ol, tautomerism

(c) Prop-2-en-2-ol, geometrical isomerism (d) Prop-1-en-2-ol, tautomerism

4. Which is the most suitable reagent for the following conversion

CH_3 - CH = CH – CH_2 –C^{II} $CH_3 \rightarrow CH_3$ Ch = CH- CH_2 ^{II}C-OH

(a) Tollen's reagent (b) Benzoyl peroxide (c) I_2 and NaOH

(d) Sn and NaOH solution

5. Calcium acetate when dry distilled gives :

(a) formaldehyde (b) acetaldehyde (c) acetone (d) acetic anhydride

6. The weakest acid among the following is :

(a) $CHCl_2COOH$ (b) CH_3CHOOH (c) $CH_2COlCOOH$

(d) CCl_3COOH

7. The formation of cyanohydrin from propanone is which type of reaction ?

(a) Electrophilic substitution (b) Nucleophilic substitution

(c) Electrophilic addition (d) Nucleophilic addition

8. The acid formed when propyl magnesium bromide is treated with CO_2 is :

(a) C_3H_7COOH (b) C_2H_5COOH (c) both (d) None of these

9. Arrange the following acids in order of the increasing acidity

(a)    

NO^2 OH

(A) (B) (C) (D)

(a) B < C <A<D (b) A<B<C<D (c) C<B<D<A (d) C<D,<B<A

10. Which of the following compounds do not undergo aldol condensation?

(a) CH_3 CHO (b)  CHO (c) CH_3 ^{II}C- CH_3 (d) CH3 C CHO

CH_3

1. Assertion : Formaldehyde is a planar molecule

Reason : It contains Sp^2 phybridised carbon atom.

2. Assertion : Compounds containing –CHO group are easily oxidized to corresponding

carboxylic acids.

Reason : Carboxylic acids can be reduced to alcohols by treatment with $LiAlH_4$

3. Assertion : The χ hydrogen atom in carbonyl compounds is less acidic.

   Reason : The anion formed after the loss of hydrogen atom is resonance stablised.

4. Assertion : Aromatic aldehydes and formaldehyde undergo Cannizzaro reaction.

   Reason : Aromatic aldehydes are almost as reactive as formaldehyde.

5. Assertion : Aldehydes and ketones, both react with Tollen's reagent to form silver mirror.

   Reason : Both aldehydes and ketones contain a carbon group.

6. Assertion : The solubility of aldehydes and ketones in water decreases with increase in the size of alkyl group.

   Reason : ALKyl groups are electron repelling groups.

7. Assertion : Ch_3 add to >C =O group irreversibly but CN^- ion adds reversibly.

   Reason : CH_3 ion is much stronger nucleophile than CN^-ion.

Chapter – 11

Amines

1. Amongst the following, the strongest base in aqueous mediumis

   (a) $CH3NH_2$ (b) $NCCH_2NH_2$ (c) $(CH_3)_2NH$ (d) $C_6H_5NHCH_3$

2. Which of the following the weakest Bronsted base ?

   (a)  NH_2 (b)  N H (c)  NH_2 (d) CH_3NH_2

3. Benzylamine may be alkylated as shown in the following equation :

   $C_6H_5CH_2NH_2 + R\ X \rightarrow C_6H_5CH_2NHR$

   Which of the following alkylhalides is best suitable for this reaction through SN1 mechanism?

   (a) CH_3Br (b) C_6H_5Br (c) $C_6H_5CH_2Br$ (d) C_2H_2Br

4. Which of the following reagents would not be a good choice for reducing an aryl nitro compound to an amine

   (a) H_2(excess)/Pt (b) $LiAlH_4$ in ether (c) Fe and HCl

   (d) Sn and HCl

5. The source of nitrogen in Gabriel synthesis of amines is

   (a) Sodium azide, NaN_3(b) $\rightarrow$Sodium Nitrite, $NaNO_2$

   (c) Pottasium cyanide, KCN (d) Potassium phthalimide $C_6H_4(CO)N^2$-K^+

6. The best reagent for converting 2-phenylpropanamide into 2-phenylopropanamine is

   (a) excess H_2 (b) Br_2 in aqueous NaOH

   (c) iodine in the presence of red phosphorus (d) $LiAlH_4$ in ether

7. Which of the following compounds will dissolve in an alkali solution after it undergoes reaction with Hinsberg's reagent?

   (a) $(CH_3)_3N$ (b) CH_3NH_2 (c) $(C_2H_5)_2NH$ (d) $C_6H_5NHC_6H_5$

9. An organic compound A on treatment with NH_3 gives B which on heating give C C when treated with Br_2 in the presence of KOH produces ethylamine, Compound A is

   (a) $CH_3\ CH_2\ CH_2$ COOH (b) CH_3COOH

   (c) $CH_3\ CH_3$ COOH (d) CH_3- CH_2 COOH

10. Which of the following will be most stable diazonium salt $RN^+{}_2X$?

    (a) $CH_3CH_2N^+{}_2X$ (b) $C_6H_5N_2X$ (c) CH_3N_2X

    (d) $C_6H_5CH_2N^+{}_2X$

11. Which of the following cannot be prepared by Sandmeyer's reaction ?

    (a) Chlorobeazene (b) Bromobenzene

    (c) Iodobenzene (d) Fluorobenzene

1. Assertion : Acyation of amines gives a monosubstituted product whereas alkylation of amines gives polysubstituted product.

Reason : Acyl group sterically hinders the approach of further acyl group

2. Assertion : Hoffmann's bromamide reaction is given by primary amines.

Reason : Primary amines are more basics than secondary amines

3. Assertion : N-Ethylbenzene sulphonamide is soluble in alkali.

Reason : Hydrogen attached to nitrogen in sulphonamide is strongly acidic.

4. Assertion : Only a small amount of HCl is required in the reduction of nitro compounds with iron scap and HCl in the presence of steam.

Reason : $FeCl_2$ formed gets hydrolysed to release HCl during the reaction

5. Assertion : Acetanilide is less basic than aniline

Reason : Acetylation of aniline results in decrease of electron density on nitrogen.

6. Assertion : In strongly acidic solutions, aniline becomes more reactive towards electrophilic reagents.

Reason : The amino group being completely protonated in strongly acidic solution, the lone pair of electrons on the nitrogen is no longer available for resonance.

7. Assertion : In order to convert R-Cl to pure R-NH2. Gabriel-phthalimide synthesis can be used.

Reason : With proper choice of alkyl halides, pthalimide synthesis can be used to prepare 1^0, 2^0 or 3^0 amines

Chapter 13

Biomolecules

1. Glycogen is a branched chain polymer of D-gulcose units in which chain is formed by C_1-C_4 glcosidic linkage whereas branching occurs by the formation of Cl-C6 glycosidic linkage. Structure of glycogen is similar to

   (a) Amylose (b) Amylopectin (c) Cellulose (d) Glucose

2. Which of the following polymer is stored in the liver of animals ?

   (a) Amylose (b) Cellulose (c) Amylopectin (d) Glycogen

3. Proteins are found to have two different types of secondary structure viz α helix and pleated sheet structure, α helix structure of protein is stabilized by :

   (a) Peptide bonds (b) van der Waals forces (c) Hydrogen bonds

   (d) Dipole-dipole interactions

4. Which of the following acids is a vitamin ?

   (a) Aspartic acid (b) Ascorbic acid (c) Adipic acid

   (d) Saccharic acid.

5. Nucleic acids are the polymers of

   (a) Nucleosides (b) Nucleotides (c) Bases (d) Sugars

6. DNA and RNA countains four bases each. Which of the following bases is not present in RNA?

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

7. Which of the following B group vitamins can be stored in our body ?

   (a) Vitamin B_1 (b) Vitamin B_2 (c) Vitamin B_6 (d) Vitamin B_{12}

8. The presence or absence of hydroxyl group on which carbon atom of sugar differentiate RNA and DNA

   (a) 2^{nd} (b) 4^{th} (c) 3^{rd} (d) 1^{st}

9. Vitamin C is

   (a) Lactic acid (b) Citric acid (c) Aspartic acid (d) Ascorbic acid

10. Proteins can be classified into two types on the basis of their molecular shape ie fibrous protein and globular proteins. Examples of globular proteins are :

    (*a) Insulin (b) Keratin (c) Albumin (d) Myosin

1. Assertion : D (+) – Glucose is dextrorotatory in nature.

   Reason : D represents its dextrorotatory nature.

2. Assertion : Vitamin D can be stored in our body.

   Reason : Vitamin D is fat soluble vitamin.

3. Assertion : All naturally occurring aminoacids except glycine are optically active.

   Reason : Most naturally occurring amino acids have L-configuration.

4. Assertion : Deoxiyribose $C_5H_{10}O_4$ is a carbohydrate

   Reason : Carbohydrates are hydrates of carbon so compounds which follow $C_2(H_2O)_y$formula are carbohydrates

5. Assertion : Glycine must be taken through diet.

   Reason : It is non-essential essential amino acid.

6. Assertion : Reducing sugars undergo mutarotation.

   Reason : During mutarotation, one pure anomer is converted into an equilibrium mixture of two anomers.

7. Assertion : A solution of sucrose in water is dextrorotary but on hydrolysis in presence of little hydrochloric acid, it becomes laevorotatory.

   Reason : Sucrose on hydrolysis gives unequal amounts of glucose and fructose as a result of which change in sign of rotation is observed.

Chapter 14

Polymers

1. Which of the following polymers of glucose is stored by animals ?
   (a) Cellulose (b) Amylose (c) Amylopetin (d) Glycogen
2. The commercial name of polyacrylonitrile is
   (a) Dacron (b) Orion (acrilan) (c) PVC (d) Bakelite
3. Which of the following statements is not true about low density polythene ?
   (a) Tough (b) Hard (c) Poor conductor of electricity
   (d) Highly branched structure
4. Which of the following is a thermosetting plastic ?
   (a) PVC (b) PVA (c) Bakelite (d) Perspex
5. Polymer used in bullet proof glass is :
   (a) RMMA (b) Laxan (c) Nomex (d) Kevlar
6. Soft drinks and baby feeding bottles are generally made up of :
   (a) Polyester (b) Polyurethane (c) Polyurea (d) Polystyrene
7. Nylon-6 is made from
   (a) 1, 3 Butadiene (b) Chloroprene (c) adipic acid (d) Caprolactam
8. Natural rubber is a polymer of :
   (a) Styrene (b) Stryrene and 1, 3 butadiene (c) Tetrafluorethylene
   (d) 2, methyl, 1, 3-butadiene
9. Orion is a polymer of :
   (a) Styrene (b) Tetrfluorethylene (c) Vinyl chloride
   (d) Acrylonitrile
10. Heating of rubber with sulphur is known as :
   (a) Galvanisation (b) Bessermerisation (c) Vulcanisation
   (d) Sulphonation
11. Which of the following polymers need atleast one diene monomer for their preparation?
   (a) Dacron (b) Buna-S (c) Neoprene (d) Novolac

1. Assertion : Rayon is a semi synthetic polymer andis taken as a better choice than cotton fabric.
   Reason : Mechanical and aesthetic properties of cellulose can be improved by acetylation.
2. Assertion : Olefinic monomers undergo addition polymerization
   Reason : Polymerisation of vinychloride is initiated by peroxide/perusulphur
3. Assertion : Polyamides are best used as fibres because of high tensile strength

Reason : Strong intermolecular forces (like hydrogen bonding within polyamides) lead to close packing of chains and increase the crystalline character, hence provide high tensile strength to polymers.

4. Assertion : For making rubber synthetically, isoprene molecules are polymerized.
   Reason : Neoprene (a polymer of chloroprene) is a synthetic rubber
5. Assertion : Network polymers are thermosetting
   Reason : Network polymers have high molecular mass.
6. Assertion : Polytetrafluoroethene is used in making non-stick cookwares.
   Reason : Fluorine has highest electronegativity.
7. Assertion : Phenol-Formaldehyde polymer is a thermosetting polymer.
   Reason : It can be melted time and again without any change.
8. Assertion : PTFE has high thermal stability and chemical inertness.
   Reason : It is a thermoplastic.

Chapter 15

Chemistry in Everyday Life

1. Which statement about aspirin is not ture ?

   (a) Asprin belongs to narcotic analgesics (b) It is effective in relieving analgesics.

   (c) It has antiblood clotting action (d) It is a neurologically active drug

2. Salvarsan is arsenic containing drug which was first used for the treatment of

   (a) Syphilis (b) Typhoid (c) Meningitis (d) dysentery

3. A narrow spectrum antibiotic is active against

   (a) gram positive or gram negative bacteria (b) gram negative bacteria only

   (c) single organism or one disease

   (d) both gram positive and gram negative bacterial

4. Compound which is added to soap to impart antiseptic properties is

   (a) sodium laurysulphate (b) sodium dodecylbenzenesulphonate

   (c) rosin (d) bithional

5. Which among of the following is not an antibiotic ?

   (a) Penicillin (b) Oxytocin (c) Tetracyline (d) Erythromycin

6. Glycerol is added to soap. It function

   (a) as a filler (b) to increase leathering

   (c) to prevent rapid drying (d) to make soap granules.