APEEJAY SCHOOL, SHEIKH SARAI

FIRST TERM EXAMINATION, 2019–20 **SS-50**

CLASS-XII

CHEMISTRY

[SET-A]

Time allowed : 3 Hrs. **M.M. : 70**

General Instructions :

- ***(i) All questions are compulsory.***
- ***(ii) Question numbers 1 to 20 are very short answer/objective questions and carry 1 mark each.***
- ***(iii) Question number 21 to 27 are short answer questions and carry 2 marks each.***
- ***(iv) Question number 28 to 34 carry 3 marks each.***
- ***(v) Questions number 35 to 37 carry 5 marks each.***
- ***(vi) Use log tables, if necessary. Use of calculators is not allowed.***

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1. Natural rubber is a polymer of :
   (a) Styrene (b) Styrene and 1, 3 butadiene
   (c) Tetrafluoroethylene (d) 2-methyl-1, 3-butadiene

2. Heating or rubber with sulphur is known as :
   (a) Galvanisation (b) Bessemerisation
   (c) Vulcanisation (d) Sulphonation

3. Which of the following is not a target molecule for drug function in body ?
   (a) Carbohydrates (b) Lipids
   (c) Vitamins (d) Proteins

4. Salvarsan is arsenic containing drug which was first used for the treatment of :
   (a) Syphilis (b) Typhoid
   (b) Meningitis (c) Dysentry

5. Dinucleotide is obtained by joining two nucleotides together by phosphodiester linkage. Between which carbon atoms of pentose sugars of nucleotides are these linkage present?
   (a) 5′ and 3′ (b) 1′ and 5′
   (c) 5′ and 5′ (d) 3′ and 3′

P.T.O.

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

(a) NH_4^+ (b) $SiCl_4$

(c) SF_4 (d) SO_4^{-2}

7. Transition elements show magnetic moment due to spin and orbital motion of electrons. Which of the following metallic ions have almost same spin only magnetic moment ?

(a) Co^{+2} (b) Cr^2

(c) Mn^{+2} (d) Cr^{+3}

8. Which of the following is not a chelating ligand ?

(a) Thiosulphato (b) Oxalato

(c) Glycinato (d) Ethane-1,2-diamine

9. The system that forms maximum boiling azeotrope is :

(a) ethyl alcohol-water (b) Benzene-toluene

(c) Acetone-Chloroform (d) Carbon disulphide-acetone

10. An electrochemical cell can behave like an electrolytic cell when :

(a) Ecell =0 (b) Ecell > Eext

(c) Eext > Ecell (d) Ecell = Eext

11. What is meant by reducing sugars ?

12. Arrange the following polymers in increasing order of their intermolecular forces : Buna-S, Nylon-6, 6, Polythene.

13. Which site of an enzyme is called allosteric site ?

14. Which one has higher electron gain enthalpy with negative sign, sulphur or oxygen ?

15. Write the general electronic configuration for d-block elements.

16. Arrange the following complexes in the order of increasing electrical conductivity : $[Co(NH_3)_3Cl_3]$, $[Co(NH_3)_5Cl]Cl_2$, $[Co(NH_3)_6]Cl_3$, $[Co(NH_3)_4Cl_2]Cl$

17. Write Nernst equation for the reaction

$$2Cr + 3Fe^{+2} \longrightarrow 2Cr^{+3} + 3Fe$$

18. Why is glycol and water mixture used in car radiators in cold countries?

19. What will be the correct order for the wavelength of absorption in the visible region for the following :

$$[Ni(NO_2)_6]^{4-},\ [Ni(NH_3)_6]^{2+},\ [Ni(H_2O)_6]^{+2}$$

20. Out of Amylose and Amylopection, which components of starch is water soluble ?

21. Write the reactions involved when D-glucose is treated with the following reagents :
(i) HCN (ii) Br_2 water

OR

(i) What is the structural difference between nucleoside and nucleotide ?
(ii) What is zwitter ion ?

22. Write equations for the synthesis of following polymers.
(i) Glyptal (ii) Teflon

23. Classify as Bacteriostatic and bactericidal drugs among the following :
Penicillin, Ofloxacin, Chloramphenicol, Erythromycin

24. (i) $[Ti(H_2O)_6]^{+3}$ is coloured while $[Sc(H_2O)_6]^{+3}$ is colourless. Why ?
(ii) On what basis can you say that scandium (Z = 21) is a transition element but zinc (Z = 30) is not ?

25. Using IUPAC norms write the formulae for the following :
(i) tris (ethane-1,2-diamine) chromium (III) chloride
(ii) Potassium tetrahydroxozincate (II)

26. Write the name of the cell which is generally used in hearing aids. Write the reactions taking place at the anode and the cathode of this cell.

27. State Kohlrausch law of independent migration of ions. Why does the conductivity of a solution decreases with dilution ?

28. (i) What are the products of hydrolysis of maltose ?
(ii) What is invert sugar ?
(iii) Name the vitamin whose deficiency causes pernicious anaemia.

29. (i) What is the significance of number 6, 6 in polymer nylon-6, 6?
(ii) is $(NH\text{-}CHR\text{-}CO)_n$ a homopolymer or copolymer ?
(iii) Is PVC a condensation or addition polymer ?

30. (i) What is the difference between agonist and antagonist ?
(ii) Why soaps do not work in hard water. Give reaction.
(iii) What is the medicinal use of narcotic drugs.

31. Arrange the following in increasing order of property indicated, giving reason :
(a) Hydrides of group-16 (reducing character)
(b) Hydrides of group 17 (thermal stability)
(c) Hydrides of group 16 (Boiling point)

32. (i) What type of isomerism is shown by the complex $[Co(NH_3)_5(SCN)]^{+2}$

(ii) Why is $[NiCl_4]^{-2}$ paramagnetic while $[Ni(CN)_4]^{-2}$ is diamagnetic ?

(iii) Why are low spin tetrahedral complexes rarely observed.

OR

Give the electronic configuration of the following complexes on the basis of crystal field splitting theory.

$[CoF_6]^{-3}$, $[Fe(CN)_6]^{-4}$, $[Cu(NH_3)_6]^{+2}$

33. At 300K, 30g of glucose, $C_6H_{12}O_6$ present per litre in its solution has an osmotic pressure of 4.98 bar. If the osmotic pressure of another glucose solution is 1.52 bar at the same temperature, calculate the concentration of other solution.

34. Conductivity of 2.5×10^{-4}M methanoic acid is $5.25\times10^{-5}Scm^{-1}$. Calculate its molar conductivity and degree of dissociation.

Given : $\lambda^0(H^+)=349.5Scm^2mol^{-1}$ and $\lambda^0(HCOO^-)=50.5Scm^2mol^{-1}$

35. (i) Explain why on addition of 1 mol glucose to 1 litre water the boiling point of water increases.

(ii) Henry's law constant for CO_2 in water is 1.67×10^8 Pa at 298K. Calculate the number of moles of CO_2 in 500 ml of soda water when packed under 2.53×10^5 Pa at the same temperature.

OR

(i) State the relationship amongst cell constant of a cell, resistance of a solution in the cell and conductivity of the solution. How is molar conductivity of a solute is related to conductivity of its solution ?

(ii) A voltaic cell is set up at 25°C with the following half cells :

Al | Al^{+3} (0.001M) and Ni/Ni^{+2} (0.50 M)

Calculate the cell voltage [$E^0Ni^{+2}/Ni=-0.25V$, $E^0\ Al^{+3}/Al=-1.66V$]

36. (i) Give two examples to show the anomalous reaction of flourine.

(ii) What happens when XeF_6 reacts with Na F?

(iii) Why is H_2S a better reducing agent than H_2O?

(iv) Arrange the following acids in the increasing order of their acidic character :

HF, HCl, HBr, HI

OR

(i) Draw the structure of :

(a) H_2SO_3 (b) BrF_5

(ii) Give reasons for the following :

(a) H_2S is more acidic than H_2O

(b) Flourine does not exhibit any positive oxidation state.

(c) Perchloric acid is a stronger acid than sulphuric acid.

37. (i) Account for the following :

(a) Transition metals form large number of complex compounds.

(b) The lowest oxide of transition metal is basic whereas the highest oxide is amphoteric or acidic.

(c) E^0 value for the Mn^{+3} / Mn^{+2} couple is highly positive (+1.57V) as compare to Cr^{+3} / Cr^{+2}

(ii) Write one similarity and one difference between chemistry of lanthanoid and actinoid elements.

OR

(i) Complete and balance the following chemical equations :

(a) $Cr_2O_7^{-2} + I^- + H^+ \longrightarrow$ (b) $MnO_4^- + SO_3^{-2} + H^+ \longrightarrow$

(ii)Account for the following :

(a) The members in actinoid series exhibit larger number of oxidation states than the corresponding members in lanthanoid series.

(b) Orange colour of dichromate ion changes to yellow in alkaline medium.

(c) Mn_2O_7 is acidic whereas MnO is basic.

APEEJAY SCHOOL, SHEIKH SARAI

FIRST TERM EXAMINATION, 2019–20 SS-51

CLASS-XII

CHEMISTRY

[SET-B]

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(b) Orange colour of dichromate ion changes to yellow in alkaline medium.

(c) Mn_2O_7 is acidic whereas MnO is basic.

APEEJAY SCHOOL, PANCHSHEEL PARK

PRE-BOARD EXAMINATION, 2019-20 **04**

CLASS-XII

CHEMISTRY

Time allowed : 3 hrs. ***Maximum Marks : 70***

General Instructions :

(a) All questions are compulsory.

(b) Section A : Q. no. 1 to 20 are very short answer questions (objective type) and carry 1 mark each.

(c) Section B : Q. no. 21 to 27 are short answer questions are carry 2 marks each.

(d) Section C : Q. no. 28 to 34 are long answer questions and carry 3 marks each.

(e) Section D : Q. no. 35 to 37 are also long answer questions and carry 5 marks each.

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

(g) Use log tables if necessary, use of calculators is not allowed.

SECTION–A

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

A conductivity cell is used for measuring the resistance of an ionic solution by using AC source for passing current. Resistance of a conductivity cell filled with 0.1 mol/lt KCl solution is 100 ohm. The resistance of same cell when filled with KCl solution having 3.725 g of KCl dissolved per litre of solution is 520 ohm. The conductivity of 0.1 mol/lt KCl solution is 1.29 S/m. [Molar mass of KCl = 74.5 g/mol]

1. What is cell constant of above conductivity cell?
2. What is molar concentration of KCl solution with resistance 520 ohm?
3. What is the effect of dilution on specific conductivity of KCl solution? Why?
4. Write the products of electrolysis of aqueous solution of KCl.
5. How does molar conductivity vary with increase in temperature in KCl solution?

Questions 6 to 10 are one word answers :

6. Name the compound added to bauxite ore so as to decrease its melting point and increase its electrical conductance.
7. Name the linkage by which nucleotides are joined between 5′ and 3′ carbon atom of the pentose sugar.
8. Name one amino acid which is optically inactive and amphoteric in nature.
9. What type of reaction occurs in formation of terylene polymer?
10. Which of the following is the most reactive with HCN :

    Methanal, Ethanal, Acetone.

Questions 11 to 15 are multiple choice questions :

11. The IUPAC name of the compound $CH_3 - O - CH_2 - CH(Br) - CH_3$

    (a) 2-Bromo-3-methoxy propane (b) 2-Bromo-1-methoxy propane
    (c) 2-Bromopropyl methyl ether (d) 1-Bromo-2-methoxy propane

12. The IUPAC name of $[Co(NH_3)_6]^{+3}$ is :

    (a) Hexaammine cobalt(III) (b) Hexaamine cobalt(III)
    (c) Hexaammino cobalt(III) (d) Hexaammine cobtaltate(III)

13. The type of isomerism shown by $[Cr(NH_3)_6][Co(CN)_6]$

    (a) Ionisation isomerism (b) Linkage isomerism
    (c) Geoemtrical isomerism (d) Coordination isomerism

14. Which of the following is most stable?

    (a) $[Co(en)_3]^{+3}$ (b) $[Co(NH_3)_6]^{+3}$
    (c) $[CoF_6]^{3-}$ (d) $[Co(H_2O)_6]^{+3}$

15. Predict the number of ions produced per formula unit in an aqueous solution of $Na_3[Cr(C_2O_4)_3]$

    (a) 4 (b) 6
    (c) 3 (d) 5

Direction (Q. 16 to Q. 20) : In the following Questions, the assertion and reason have been put forward. Read the statements carefully and choose the correct alternative from the following :

(a) Both the assertion and reason are correct and the reason is the correct explantion of the assertion.

(b) The assertion and the reason are correct but the reason is not the correct explanation of the assertion.

(c) Assertion is true but reason is false.

(d) The statement of assertion is false but the reason is true.

16. Assertion : Vitamin C must be taken regularly in our diet.

Reason : Vitamin C cannot be stored in our body because it is soluble in water and gets excreted.

17. Assertion : During denaturation of protein 2° and 3° structure are destroyed but 1° structure remains intact.

Reason : The coagulation of egg white in boiling is an example of denaturation.

18. Assertion : Noble gases have large positive electron gain enthalpy.

Reason : Noble gases have stable electronic configurations, they have no tendency to accept the electron and energy is absorbed to overcome repulsion.

19. Assertion : The bond angle C—O—H in alcohol is slightly less than the tetrahedral angle (109°28′).

Reason : It is due to repulsion between the unshared electron pairs of oxygen.

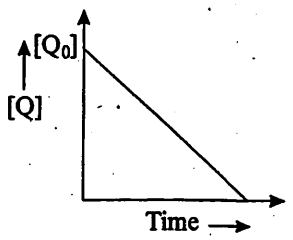
20. Assertion : Although halogens are electron withdrawing but still *o* and *p* directing towards electrophillic substitution reaction.

Reason : It is due –I (inductive effect) and –R (resonance effect)

SECTION–B

21. Calculate the number of lone pairs on the central atom in IF_3 and XeF_2 and predict the shape on the basis of VSEPR theory.

22. In the reaction, $P + Q \longrightarrow R + S$, the time taken for 75% reaction of P is twice the time taken for 50% of the reaction of P. The concentration of Q varies with reaction time as shown in the figure. Hat is overall order of reaction? What is the unit of K?



23. Define the following :

(a) Osmotic pressure

(b) Molarity

(c) Ideal solution

(d) Boiling point elevation constant

24. Arrange the following in increasing order of reactivity towards Nucleophillic addition reaction and give reason :

Benzaldehyde, methyl phenyl ketone, 4-Methyl benzaldehyde, 4-Nitro benzaldehyde

25. (a) State the hybridization and magnetic property of $[Co(NH_3)_6]^{+3}$ ion according to VBT.

(b) Write the structures of geometrial isomers of comples ion $[Co(en)_2Cl_2]^+$.

OR

(a) Write the possible structural isomers and sterioisomers of $[Co(NH_3)_4Cl_2]Br$.

(b) What will happen if $AgNO_3$ is added to these isomers?

26. (a) Out of Al, Mg, Zn, Cu which metals can be extracted by electrolytic reduction?

(b) What is the role of CO in purification of Nickel.

OR

Write the reaction of Ag_2S with NaCN and reduction with Zn.

27. (a) Which of the following is allylic halide :

$CH_2=CH-CH_2-Cl$, $CH_2=CH-Cl$, $CH_3-C(Br)=CH_2$

(b) Name an optical active isomer of $C_5H_{11}Br$.

SECTION–C

28. 1.8 g of a compound (molar mass 256 g/mol) to be dissolved in 75 g of benzene. Calculate depression in freezing point [Kf = 5.12 K kg / mol].

29. (a) Define Half-life.

(b) Show that $t_{99.9\%}$ is 10 times $t_{1/2}$.

OR

(a) What is expression for slope when log K is plotted versus 1/T ?

(b) What is the order of the following reaction :

$$H_2(g)+Cl_2(g) \longrightarrow 2HCl(g)$$

(c) How is $t_{1/2}$ of third order reaction related to initial concentration?

30. (a) Which of the following properties of colloids is not dependent on the charge on colloidal particles ? Coagulation, electrophoresis, electro osmosis, Tyndall effect.

(b) Why is low temperature is favourable for physiosorption?

(c) Why is chemisorption specific in nature?

31. (a) Why is Cu^{+2} more stable than Cu^{+}?

(b) Why is Ti^{+3} coloured whereas Sc^{+3} colourless?

(c) Why does zinc have lowest enthalpy of atomization in 3*d*-series?

32. (a) Phenol to Benzoic acid.

(b) Benzyl alcohol to Phenyl ethanoic acid.

(c) Ethanol to methanamine.

33. An organic compound (A) having molecular formula ($C_8H_{16}O_2$) was hydrolysed with dil. H_2SO_4 to give two compounds (B) and (C). Oxidation of (C) with chromic acid produced (B). (C) on dehydration gives 1-butane. Write the equation for the reactions involved.

OR

(a) Distinguish between the following pairs of compounds by suitable chemical test :

(i) Benzaldehyde and Acetone

(ii) Formic acid and Methanol

(b) Why do carboxylic acids not give reaction of carbonyl group?

34. (a) Name an artificial sweetener used in cold drinks.

(b) Name a drug used in chemotherapy of cancer.

(c) What are broad spectrum antibiotic? Give one example.

SECTION–D

35. (a) How many coulombs of electricity is needed to convert 0.1 mole of MnO_4^- to Mn^{+2} ions in acidic medium?

(b) Why does (λm) of HCl is more than (λm) of NaCl?

(c) State and explain Faraday's first law of electrolysis.

OR

(a) Using the Gibbs energy change $\Delta G^0 = +63.3$ KJ for the reaction

$$Ag_2CO_3 \rightleftharpoons 2Ag^+(aq) + CO_3^{-2}(aq)$$

Calculate Kc of Ag_2CO_3 in water at 25°C [$R = 8.314\,J/K/mol$]

(b) Define the following :

(i) Faraday constant (ii) Electrochemical equivalent.

36. (a) Write the following reaction :

(i) Diazotization (ii) Sandmeyer's reaction

(b) How will you convert :

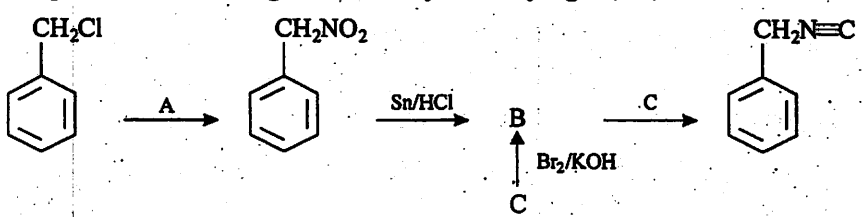
(i) Benzene to aniline

(ii) Ethane nitrile to ethyl amine?

(c) Why are amines basic in nature?

OR

(a) Complete the following reactions by identifying A, B, C and D



(b) Distinguish between :

(i) Aniline and Benzyl amine

(ii) Methyl amine and Dimethylamine.

(c) A compound C_3H_9N reacts with HNO_2 to form 'B' C_3H_8O. Identify A and B.

37. (a) Which group 16 element shows catenation to maximum extent?

(b) Name the allotrope of sulphur stable at 369 K.

(c) What is the maximum covalency of sulphur? Give example.

(d) Which hydrogen halide is most volatile?

(e) Name the element which is best oxidising agent.

OR

Complete the following reactions and balance them :

(a) $S + H_2SO_4$ (conc.) $\longrightarrow$

(b) $SO_2 + O_2 \xrightarrow{V_2O_5,\ \Delta}$

(c) $H_2(g) + S \xrightarrow{\text{boiling}}$

(d) $FeS + H_2SO_4$(dil) $\longrightarrow$

(e) $Cr_2O_7^{-2} + SO_2 + H^+ \longrightarrow$

ROLL NO.	
NAME	
CLASS & SECTION	

APEEJAY COMMON ANNUAL EXAMINATION, 2019-20 **08**

CLASS-XII

CHEMISTRY

Time allowed : 3 hrs. ***Maximum Marks : 70***

General Instructions :

- ***All questions are compulsory.***
- ***Marks for each question are indicated against it.***
- ***Section A : Q. No. 1 to 20 are very short answer questions (objective type), each of one mark.***
- ***Section B : Q. No. 21 to 27 are short answer questions of two marks each.***
- ***Section C : Q. No. 28 to 34 are short answer questions of three marks each.***
- ***Section : Q. No. 35 to 37are long answer questions of five marks each.***
- ***Use log tables if necessary. Calculators are not permitted.***
- ***There is no overall choice but internal choice is being provided. Attempt any one of the choices in such questions.***

SECTION–A

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

Vapour pressure of a liquid is the pressure exerted by the vapours of a liquid in equilibrium with the liquid at a given temperature. When 18 gram of glucose is added to a litre of water, the vapour pressure of the solution is reduced. French chemist Raoult (1886) carried out a series of experiments and studied the vapour pressure of a number of binarysolutions. He found that the vapour pressure of a solution containing non-volatile solute is Jess than that of the pure solvent.

1. What is the mole fraction of glucose in this solution? (1)
2. Will two glucose solutions of same molarity prepared in different solvents have same freezing point depression? Why? (1)
3. If in place of glucose, 10 gram of urea is added to make the aqueous solution, which solution will show a higher boiling point? (1)

P.T.O.

20. Assertion : Paraffinic monomers undergo addition polymerisation. (1)

Reason : Polymerisation of vinyl chloride is initiated by peroxides.

SECTION–B

21. Write the IUPAC names of the following : (2)

(a) $Na_3[Cr(OH)_2F_4]$

(b) $[Co(NH_3)_5SCN]Cl_2$

22. Complete the following reactions : (2)

(i) $XeF_6 + 2\ H_2O \rightarrow$

(ii) $2NaOH + Cl_2 \rightarrow$
(cold and dilute)

23. (a) What is the effect of denaturation on the structure of proteins ? (2)

(b) Write the chemical name of Vitamin B 1 and also name the disease caused by its deficiency.

24. A first order reaction is 50% completed in 40 minutes at 300K and in 20 minutes at 320K. Calculate the activation energy of the reaction. R = 8.314 J/K/mol. (2)

OR

The rate constant for the first order reaction is 60 s^{-1}. How much time will it take to reduce the initial concentration of the reaction to its $1/16^{th}$ value?

25. (a) Give chemical tests to distinguish between the following pairs of compounds: (2)

(i) phenol and propanol.

(ii) ethanol and dimethylether.

(b) Out of ethanoic acid and phenol , which is more acidic and why?

26. Write the name of monomers of the following polymers : (2)

(a) Nylon-66

(b) Bakelite

OR

Write the equation for the formation of biodegradable polyester. Also name the monomers.

27. Discuss the following processes : (2)

(a) Zone refining

(b) Mond's process

SECTION–C

28. What is meant by didentate, hexadetate and ambidentate ligands? Give an example of each. (3)

OR

(i) NH_3 is strong ligand and NH_4^+ is not, why?

(ii) Find the co-ordination number of the central metal ion in each of the following :

$[Co(NH_3)_5Cl]Cl_2$ and $K_2[Fe(Cl)_4]$

29. Calculate the boiling point of a solution containing 0.456 g of camphor (Molar mass 152) dissolved in 31.4 g of acetone (bp = 56.30 degC) if molal elevation constant per 100 g of acetone is 17.2 degC. (3)

30. The rate of a particular reaction quadruples when the temperature changes from 293K to 313K. Calculate the energy of activation of the reaction. (3)

OR

The rate constant for the decomposition of hydrocarbon is $2.418 \times 10^{-5}\ s^{-1}$ at 546 K. If the energy of activation is 179.9 kJ/mole, what will be the value of pre-exponential factor.

31. Account for the following facts : (3)

(a) Ferric Hydroxide sol is positively charged.

(b) The extent of physical adsorption decreases with rise in temperature.

(c) A delta is formed at the point where a river enters the sea.

32. Carry out the following name reactions : (3)

(a) Hofmann's Bromamide reaction

(b) Carbylamine reaction

(c) Gabriel phthalimide synthesis.

33. What are narcotics? Explain

(a) Sedatives (b) Tranquilisers

OR

What is the difference between :

(a) Antiseptic and disinfectant

(b) Analgesic and anti-histamine

Give an example of disinfectant and anti-histamine drug.

34. Write the formula of main products formed in the following chemical reactions : (3)

(a) $(CH_3)_2CH - Cl \xrightarrow[\text{dry ether}]{Na}$

(b) $CH_3Br + AgF \xrightarrow{\Delta}$

(c) $CH_3CH_2Br + NaI \xrightarrow{\text{Dry Acetone}}$

OR

Carry out the following Name Reactions :

(a) Swart's Reaction

(b) Williamson's synthesis

SECTION–D

35. (i) The cell in which the following reaction occurs : (5)

$$2\ Fe^{3+}(aq) + 2I^-(aq) \rightarrow 2Fe^{2+}(aq) + I_2(s)$$

has E°_{cell} 0.236V at 298K. Calculate the standard Gibb's energy and the equilibrium constant of the reaction.

(ii) Represent the cell in which the following reaction takes place.

$$Mg\ (s) + 2Ag^+\ (0.0001M) \rightarrow Mg^{2+}\ (0.130M) + 2Ag(s)$$

Calculate its E if E° is 3.17 V

OR

The following chemical reaction is occurring in an electrochemical cell

$$Mg(s) + 2Ag^+\ (0.0001\ M) \longrightarrow Mg^{2+}\ (0.10M) + 2Ag(s)$$

E° electrode values are

$Mg^{2+} / Mg = -2.36V$

$Ag^+ / Ag = 0.81V$

For this cell calculate/write :

(a) (i) E° value for $2Ag^+ / 2Ag$

(ii) Standard cell potential E°_{cell}

(b) Cell potential E_{cell}

(c) (i) Symbolic cell representation of the above cell

(ii) Will the above cell reaction be spontaneous?

36. (A) Arrange the following in the property indicated against each set : (5)

(i) HF, HCl, HBr, HI – increasing bond dissociation enthalpy

(ii) H_2O, H_2S, H_2Se, H_2Te–increasing acidic character

(B) X_2 is a greenish yellow gas with pungent smell and used in purification of water. On dissolving water it gives a solution which turns blue litmus red.When it is passed through NaBr solution Br_2 is obtained.

(i) Identify the gas.

(ii) What are the products obtained when X_2 reacts with ammonia? Give chemical equations.

OR

Concentrated sulphuric acid is added to the following by heating each of them in the test-tube.

Cane sugar, sodium bromide, copper turnings, sulphur powder and potassium chloride.

Identify in which of the above test tube the following change will be observed. Support your answer with the help of a chemical equation.

(a) formation of black substance

(b) evolution of brown gas

(c) evolution of colourless gas

(d) formation of brown substance which on dilution becomes blue

(e) disappearance of yellow powder along with evolution of colourless gas.

37. Explain the following : (5)

(a) Acetaldehyde, CH_3CHO, does not undergo Cannizaro's reaction but trichloro acetaldehyde, Cl_3CHO does.

(b) Benzaldehyde gives a positive test with Tollen's reagent but not with Fehling's or Benedict solution.

(c) Aldehydes undergo oxidation more readily than ketones.

OR

A compound (X) of molecular $C_4H_8Cl_2$ yields a compound (Y) on hydrolysis. (Y) gives red precipitate with Fehling's solution. Oxidation of (Y) gives (Z) which when reacts with $LiAlH_4$ forms 2-methylpropan-1-ol. What are (X), (Y) and (Z). Write the relevant equations.

BEST OF LUCK!