Directorate of Education
Govt. of NCT of Delhi

Practice Test Material
2015-2016

Subject : Chemistry
Class : XII

Under the guidance of :

Addl. DE (School/Exam)

<u>**Prepared by :**</u>

1. Mr. Mukesh Kumar Kaushik   Lecturer   RPVV, Narela
2. Mr. Harpreet Singh   Lecturer   RPVV, Kishan Ganj
3. Mrs. Anita   Lecturer   RPVV, Lajpat Nagar
4. Mr. Pradip Mundra   Lecturer   RPVV,

PRACTICE TEST-1

CLASS: XII

SUBJECT: CHEMISTRY

SOLID STATE

Time : 50 min.   **M.M. 25**

One mark questions

1. How many octahedral voids are there in 1mol of a compound having cubic closed packed structure?

2. How much space is empty in a hexagonal closed packed solid?

3. Name one solid in which both Frenkel and Schottky defects occur.

4. How many atoms constitute one unit cell of a FCC Crystal?

5. Why conductivity of silicon increases on doping it with phosphorous?   1x5=5

Two marks questions

6. Explain the following terms with example each :

   (a) 13-15 compounds

   (b) Ferrimagnetism

7. AgCl is doped with 10^{-2} mol % of $TlCl_3$, find the concentration of cation vacancies.

8. The composition of a sample of Wustite is $Fe_{0.93}O_{1.00}$. What percentage of Fe is present as Fe(II)?   2x3=6

Three marks questions

9. In terms of band theory, what is the difference between conductor, semi-conductor and insulator?

10. A metallic element has BCC lattice. Edge length of a unit cell is 2.88×10^{-8} cm. The density of the metal is 7.20g cm^{-3}. Calculate.

    a) The volume of unit cell

    b) Mass of unit cell

    c) Number of atoms in 100g of metal

11. An element E crystallizes in body centre cubic structure. If edge length of cell is 1.469×10^{-10}m and the density is 19.3 gm/cm^3, calculate the atomic mass of element. Also calculate the radius of an element on atom.

12. a) ZnO turns yellow on heating. Why?

    b) Write number of all possible Bravis lattices.

    c) "Crystalline solids are anisotrophic in nature". Explain.

    d) Contrast conduction mechanism of n-type and p-type semi-conductor

    e) What is doping?

PRACTICE TEST-2
CLASS: XII
SUBJECT: CHEMISTRY
SOLUTION

Time : 50 min.   **M.M. 25**

1. Out of 0.1 molal solution of glucose and sodium chloride. Which one will have higher boiling point?

2. Which colligative property is preferred for determination of molar mass of a solute accurately?

3. Give an example of maximum boiling azeotrope.

4. State the main advantage of molality over molarity as the unit of concentration.

5. Why is vapour pressure of solution of glucose in water lower than that of pure water?

6. Account for the following :

   (a) Aquatic species are more comfortable in cold water than in warm water.

   (b) A person suffering from high blood pressure is advised to take less amount of common salt.

7. Calculate the mass of compound (molar mass = 256g/mol) to be dissolved in 75g of benzene to lower its freezing point of 0.48K (K_f for benzene = 5.12K kg mol^{-1}).

8. What is meant by positive and negative deviations from Raoult's and how is the sign of $\Delta_{mix}H$ related to positive and negative deviations from Raoult's law.

9. Calculate Van't Hoff factor in each of the following :

   a) 50% ionized $K_4[Fe(CN)_6]_{aq}$

   b) 60% ionized $CaCl_2$

   c) Benzoic acid which is 50% dimerised in benzene

10. Sonia's grandmother lives in Shimla. In winter there is lot of snow infront of her house. She asked Sonia to clear the snow. She spread sodium chloride on snow.

    a) How does salt cause melting of ice to clear it?

    b) Mention the values associated with the act of Sonia.

11. Define the following terms :

    a) Osmotic pressure

    b) Reverse osmosis

    c) Ebullioscopic constant

12. a) State Henry's law and explain its two applications.

    b) The molal freezing point depression constant of benzene (C_6H_6) is 4.90K kg mol^{-1}. Selenium exist as a polymer of the type Se_x. When 3.26g of selenium is dissolved in226g of benzene, the observed freezing point is 0.112°C lower than for pure benzene. Deduce the molecular formula of Selenium. (Atomic mass of Se = 78.8 g mol^{-1}.

Time : 50 min.   **M.M. 25**

1. How many faradays are required to oxidize 1mol H_2O to O_2?   1

2. Write the reactions taking place at the anode and cathode of the fuel cell used the Apollo space programme.   1

3. Define limiting molar conductivity. How does the conductivity changes with change in concentration?   1

4. Galvanized iron does not corrode even if the coating of zinc is broken. Explain.

   Given $E^a_{Fe^{2+}/Fe} = -0.44V$ $E^0_{Zn^{2+}/Zn} = -0.76V$

5. Write the products of electrolysis of aq. NaCl solution.   1

6. Write the cell reaction that occurs in the lead storage battery :   1x2=2

   (a)   When the battery is discharging

   (b)   When the battery is charging

7. State Faraday's first law of electrolysis. How much charge in terms of Faraday is required for the reduction of 1mol Al^{3+} to Al.   2

8. Copper does not dissolve in HCl (aq) but dissolves in HNO_3(aq) producing Cu^{2+} ions. Explain the difference in behaviour.   2

9. The conductivity of 0.001M CH_3COOH is $4.95 \times 10^{-5}S$ cm^{-1}. Calculate its dissolution constant. Give $\Lambda^0_m(CH_3COOH) = 390.5$ Scm^2 mol^{-1}.   3

10. Write the Nernst equation and calculate the emf of the following cell at 298K.

    $Pt(S)/Br_2(l)/Br^-(0.010M)//H^+(0.030M)/H_2(g)(0.9bar)/Pt(s)$

    Give $E^0_{Br_2/Br^-/Pt} = 1.09V$ 3

11. Calculate the cel emf, Keq and $\Delta G°$ for the following cell at 25°C.

    $Zn(s)/Zn^{2+}(0.1M)//Cr^{+3}(0.01M)/Cr(s)$

    Given $E^0_{Zn^{2+}/Zn} = -0.763V$, $E^0_{cd^{2+}/Cd} = -0.74V$

    If = 96500 C mol^{-1}; R = 8.314 JK^{-1} mol^{-1} 3

12. a)   Define Kohlrausch law of independent migration of ions. Give one of it's applications.   2

    b)   Give reason for the following :

        i.   When a solution of $AgNO_3$ is electrolysed using platinum electrodes, O_2(g) is liberated at anode.

        ii.   For a weak electrolyte, the molar conductivity of solution, increases sharply as the concentration of solution approaches zero.

        iii.   The cell potential of mercury cell does not change with time.   1x3=3

PRACTICE TEST-4
CLASS: XII
SUBJECT: CHEMISTRY
CHEMICAL KINETICS

Time : 50 min.   **M.M. 25**

1. Write order of reaction and unit of rate constant on the basis of following given graph.   1
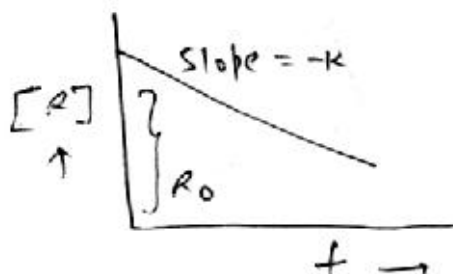

2. All natural and artificial radioactive decay of unstable nuclei take place by _____ kinetics.   1

3. Arrhenius constant are also known as frequency factor, why?   1

4. Define effective collision.   1

5. Write an example of each elementary reaction and complex reaction.   1

6. The rate of formation of NH_3 in Haber's process is 3×10^{-2} mol L^{-1} sec^{-1}. Calculate the rate of disappearance of Hydrogen.   2

7.
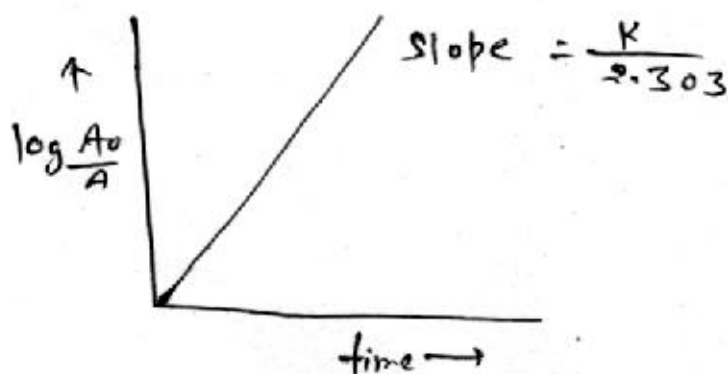
    Find order of reaction.   2

8. The following data were obtained during the first order thermal decomposition of N_2O_5 (g) at constant value :   2

$$2N_2O_{5(g)} \rightarrow 2N_2O_{4(g)} + O_2(g)$$
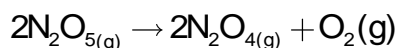
S.No.	Time/s	Total pressure
1	0	0.5
2	100	0.512

    Calculate the rate constant.

9. Show that $t_{87.5\%} = 3\ t_{1/2}$ for a first order reaction. 3

10. Can a reaction have zero activation energy? 3

11. The decomposition of A into product has value of K as $4.5 \times 10^3\ S^{-1}$ at 10°C at energy of activation 60 KJ/mol. At what temperature would K be $1.5 \times 10^4\ S^{-1}$? 3

12. For a certain chemical reaction

    $A + 2B \rightarrow 2C + D$
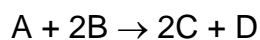
    The experimentally obtained information is tabulated below:

Exp.	A_0	B_0	Initial rate of reaction
1	0.30	0.30	0.096
2.	0.60	0.30	0.384
3.	0.30	0.60	0.0152
4.	0.60	0.60	0.768

    For this reaction

    a. Find the order of reaction w.r.t. reactants A & B.

    b. Writer ate law.

    c. Write unit of rate constant. 5

PRACTICE TEST-5

CLASS: XII

SUBJECT: CHEMISTRY

SURFACE CHEMISTRY

Time : 50 min.   **M.M. 25**

One mark questions

1. Absorption is exothermic in nature, so ΔH is always negative give reason for it.

2. A delta is formed at the meeting place of sea and river. Give reason.

3. What is the effect of temperature on chemisorptions?

4. Why is a finely divided substance more effective as an adsorbent?

5. What is role of an electrolyte during formation of emulsion?

Two marks questions

6. Write the difference between physisorption and chemisorption with respect to the following

    (a) Specificity

    (b) Temperature dependence

    (c) Reversibility

    (d) Enthalpy change

7. Distinguish between homogenous and heterogeneous catalysis. What role does adsorption play in heterogeneous catalysis?

8. Explain activity and selectivity of catalysis.

Three marks questions

9. Explain how the phenomenon of adsorption finds application in each of the following process:

    i.   Production of vacuum

    ii.   Heterogenous catalysis

    iii. Froth floatation process

10. a) What is role of desorption in the process of catalysis?   1

    b) How do lyophilic and lyohobic collides differ from one another?   2

11. a) Define electrohoresis?

    b) What causes tyndell effect?

c)   Why is gelatin added in ice cream?

OR

What is the difference between multimolecular and macro molecular collides? Give one example of each. How are associated collides different from these two types of collides?

12.   a)   What is an adsorption isotherm? Describe freundlish adsorption isotherm.   2

b)   Explain what is observed when :

i.   an electric current is passed through a sol?

ii.   an electrolyte is added to $Fe(OH)_3$ sol.

iii.   there will be no enzyme in digestive system of living organism. 3

PRACTICE TEST-6

CLASS: XII

SUBJECT: CHEMISTRY

GENERAL PRINCIPLES & PROCESSES OF ISOLATION OF ELEMENTS

Time : 50 min.   **M.M. 25**

One mark questions

1.   Why is fourth floatation method selected for concentration of sulphide ore?

2.   On what principle is the method of zone reefining of purification of metal is based upon?

3.   What is the role of SiO_2 in metallurgy of copper?

4.   Why is electrolytic reduction is preferred over chemical reduction for the isolation of certain metals?

5.   Which of the two Scraps, zinc or iron would be preferred for the recovery of copper from the low grade copper ore & why?

Two marks questions

6.   What is the role of:

  (a)   Iodine in refining of titanium

  (b)   Limestone in metallurgy of iron

7.   Describe the role of the following :

  (a)   NaCN in froth floatation process

  (b)   Cryolite in metallurgy of aluminium

                                            Or

  (a)   Role of graphite rod in extraction of Al

  (b)   What is application of Ellingham diagram.

8.   Write all the reactions involved in purification bauxite ore (with the help of NaOH)

Three marks questions

9.   Write the reactions which occur in different temperature zones in the blast furnace during the extraction of iron from iron ore.

10.   Write the reactions involved in the following processes:

  a)   Refining of zirconium/titanium by Van Arkel method.

  b)   Recovery of gold after ores has been dissolved in $NaCN_{(aq)}$ solution.

  c)   Alumino thermite process for reduction of chromium oxide.

11. Differentiate between the following :

   a) Calcination and Roasting

   b) Pig Iron and Cast Iron

   c) Vapour phase refining and zone refining

Five mark questions

12. Give reasons for the following :

   a) ZnO can be reduced to metal by heating with carbon but not with CO.

   b) Extraction of copper directly from sulphide ores is less favourble than that from its oxide ore through reduction.

   c) Depressant is added in the forth floatation process

   d) Calcination is carried out before roasting

   e) Partial oxidation of copper pyrite before smelting.

PRACTICE TEST-7

CLASS: XII

SUBJECT: CHEMISTRY

P-BLOCK ELEMENTS

Time : 50 min.   **M.M. 25**

One mark questions

1. H_3PO_3 is a diprotic acid. Give reason.

2.   Concentrated HNO_3 acid turns yellow on exposure to sunlight. Why?

3.   Why is SeF_6 more easily hydrolysed as compared to SF_6?

4.   Decomposition of $O_{3(ozone)}$ molecule is spontaneous process. Why?

5.   Why is ICl more reactive than I_2?

### *Two marks questions*

6.   Bleaching action of Cl_2 is permanent. While that of SO_2 is temporary. Give reason.

7.   Draw structure of (i) XeO_2F_2 (ii) ICL_2^+

8.   Arrange the following is increasing order :

        a) H_2O, H_2Se, H_2S, (increasing acidic character)

        b) PH_3, NH_3, BiH_3, (Boiling point)

Three marks questions

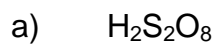9.   Account for the following :

        a) H_3PO_2 is stronger reducing agent than H_3PO_3

        b) PCl_4^+ exist but PCl_4^- is not.

        c) NO_2 get dimerise

10.   Complete the following chemical reactions:

        $AgCl(s) + NH_3 (aq) \rightarrow$

        $P_4 + SO_2Cl_2 \rightarrow$

        $NH_3 + NaOCl \rightarrow$

11.   a)   Comment on reactivity of white and red phosphorous.

        b)   Sulphur has greater tendency for catenation than oxygen. Why?

        c)   Halogens are coloured. Why?

Five mark questions
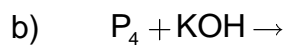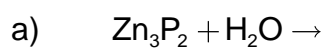
12. I)   Complete the following reactions:

a) $Fe^{2+} + SO_2 + H_2O \rightarrow$

b) $Cu + HNO_3 (dilute) \rightarrow$

d) $XeF_4 + H_2O \rightarrow$
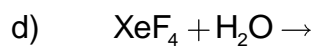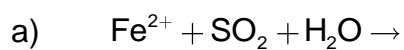
II)   Draw the shapes of following acids:

a) $H_2S_2O_8$

b) $HClO_2$

OR

I)   Complete the following reaction:

a) $Zn_3P_2 + H_2O \rightarrow$

b) $P_4 + KOH \rightarrow$

II)   Give reason :

a) F_2 is a stronger oxidising agent than Cl_2

b) PCl_5 exist but NCl_5 not

c) PCl_3 fume in moisture

PRACTICE TEST-8

CLASS: XII

SUBJECT: CHEMISTRY

d AND f BLOCK ELEMENTS

Time : 50 min.   **M.M. 25**

1.   Why Zn, Cd and Hg are not considered as transition metals?   1

2.   Out of the following elements, identify the elements which do not exhibit variable oxidation states? Sc, Cr, Co, Zn   1

3.   Mention two consequences of Lanthanoid contraction.   1

4.   Name a member of the lanthanoid series which is well known to exhibit +4 oxidation state.   1

5.   Calculate the 'spin only' magnetic moment of M^{2+}(aq) ion (z=27)   1

6.   What is meant by 'disproportionation reaction'? Give an example.   2

7.   a)   The E° (M^{2+}/M) value for Cu is positive (+0.34V). Why?   2

   b)   For the first row transition metals the E° values are :

E°	V	Cr	Mn	Fe	Co	Ni	Cu
(M^{2+}/M)	−1.18	−0.91	−1.18	−0.44	−0.28	−0.25	+0.34

   Explain the irregularity in the above values.   1

8.   A mixed oxide of iron and chromium $FeO.Cr_2O_3$ is fused with sodium carbonate in the presence of air to form a yellow coloured compound (A). On acidification the compound (A) forms an orange coloured compound (B), which is a strong oxidising agent.

   i.   Identify compound (A) and (B)

   ii.   How can (B) be converted back to (A). Explain with the help of an equation.   1x2=2

9.   Complete the following reactions:

   a) $NO_2^- + MnO_4^- + H^+ \rightarrow$

   b) $I + MnO_4^- + H^+ \rightarrow$

   c) $Cr_2O_7^{2-} + H^+ + Fe^{2+} \rightarrow$ 1x3=3

10.   Give reasons for the following :

   a)   Actinoids show a large number of oxidation states

   b)   Actinoid contraction is graeter than lanthanoid contraction

   c) Eu^{2+}, Yb^{2+} are good reductants   1x3=3

11. A blackish brown coloured solid (A) when fused with alkali metal hydroxide in presence of air, produces a dark green coloured compound (B) with on electrolytic oxidation in alkaline medium gives a dark purple coloured compound (C). Identify (A), (B) and (C) and write the reactions involved.   3

12. How would you account for the following :

    a) The enthalpy of atomization of transition metals are high

    b) Transition metals from coloured compounds

    c) Fe has higher melting point than Cu

    d) Out of d^4 species, Cr^{2+} is strongly reducing while Mn^{3+} is strongly oxidising.

    e) The highest oxidation state of Mn and Cr is shown in oxoanions like MnO_4^- and CrO_4^{2-} .   1x5=5

PRACTICE TEST-9

CLASS: XII

SUBJECT: CHEMISTRY

COORDINATION CHEMISTRY

Time : 50 min.   **M.M. 25**

1.   Why NH_4^+ ion does not act as a ligand?   1

2.   Write a relation between Δ_o and Δ_t 1

   (Δ_0 – CFSE of ortachedral complex)

   (Δ_t – CFSE of tetrahedral complex)

3.   Explain secondary valency of coordination compounds.   1

4.   Coordiantion compounds …….. used as anticancer agent.   1

5.   Role of coordination compound in metallurgy and analytical chemistry. Write complex reaction used in photography.   1

6.   The CFSE of $[CoCl_6]^{-4}$ is 1800 cm^{-1}. The CFSE of tetrahedral $[CoCl_4]^{-2}$ will be?   2

7.   Draw geometrical and optical isomeric structure of $[CoCl_2(H_2O)_4]^+$ and $[Fe(NH_3)_2(en)_2]^{+3}$.   2

8.   Explain linkage isomerism with a suitable example.   2

9.   Write down the IUPAC name of the following compounds: 1

   a) $[Cr(NH_3)\ Cl\ (en)_2]Cl_2$

   b) $[Fe(CO)_5]$

   c) $[Mn(OX)_2\ (NH_3)_2]^{-2}$ (OX-Oxalato)   3

10.   Match the column :   3

Complex	Oxidation No.
1. $[CO(NH_3)_4Cl_2]^+$	Zero
2. $[CO_2(CO)_8]$	+3
3. $Na_4[CO(S_2O_3)_3]$	+2

11.   Why are low spin tetrahedral complex not formed?   3

12.   a)   Draw the geometrical isomers of complex $[Pt(NH_3)_4Cl_2]^{2+}$ also find its geometry and hybridization if it is diamagnetic in nature.

   b)   On the basis of CFT, write the electronic configuration for d^4 ion if $\Delta_0 < P$.

   c)   Write the hybridization and magnetic behaviour of the complex $[Ni(CO)_4]$.   3

PRACTICE TEST-10

CLASS: XII

SUBJECT: CHEMISTRY

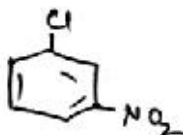## HALOALKANES AND HALOARENES

Time : 50 min.   **M.M. 25**
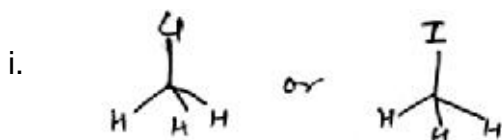
One mark questions

1.   Write IUPAC name of the following :

2.   What are enantiomers?

3.   Sulphuric acid is not used during the reaction of alcohol with KI. Why?

4.   Distinguish between Chloromethane and Chlorobenzene.

5.   Define Meso compound. Give one example.

Two marks questions

6.   Which of the following undergo SN^2 reaction faster and why?

i.

ii. $(CH_3)_3$ C Cl or CH_3 Cl

7.   Haloalkanes react with KCN to form alkyl cyanides as main product while AgCN forms isocyanides as chief product. Explain.

8.   Explain the following :

i.   Finkelstein reaction

ii.   Sandmeayer reaction

Three marks questions

9.   Convert the following :

a)   1-Bromobutane to 2-Bromobutane

b)   Benzene to p-nitrochlorobenzene

c)   Toluene to benzyl alcohol

10.   Account for the following :

a)   Grignard reagents should be prepared under anhydrous conditions.

b)   Dipole moment of chlorobenzene is less than dipole moment of Cyclohexyl chloride.

c)   n-butyl bromide has higher boiling point than t-butyl bromide.

11.   Chlorine is electron withdrawing group yet it is ortho, para director why?

Five marks questions

12.   a)   An organic compound 'A' having molecular formula C_4H_8 on treatment with dil. H_2SO_4 gives 'B'. 'B' on treatment with conc. HCl and anhydrous $ZnCl_2$ gives 'C' and on treatment with sodium ethoxide gives back 'A'. Identify 'A', 'B' and 'C'. Write the equations involved.

       b)   Complete the following :
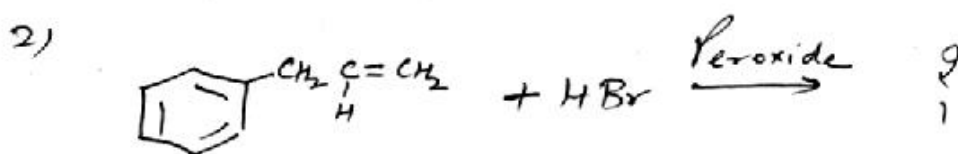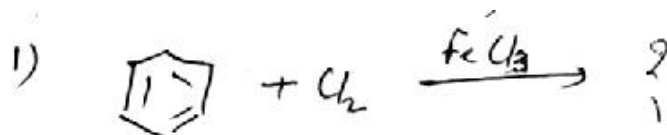
ALCOHOLS, PHENOL AND ETHERS
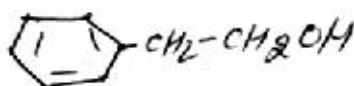
Time : 50 min.   M.M. 25
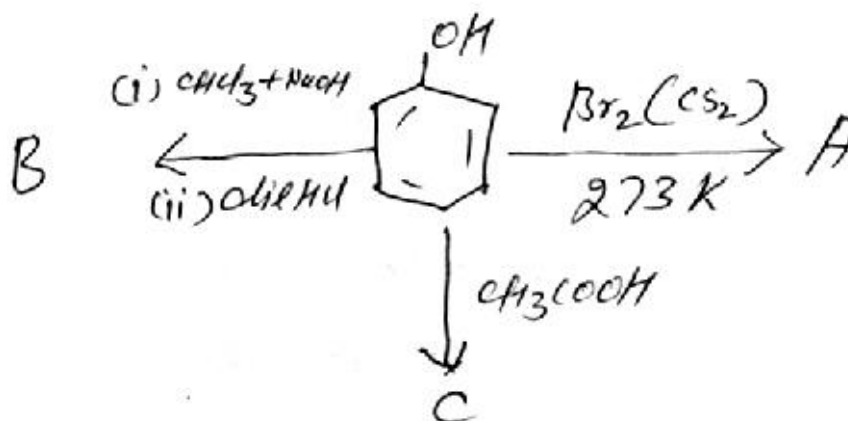
1.   Write IUPAC name of :

2.   Write structure of Phenyl propan-2-ol.

3.   Arrange the following compounds according to increasing order of their acidic strength.

        Methoxyphenol, Chlorophenol, nitrophenol

4.   Arrange the following according to increasing boiling point – Ethanol, methoxymethane, propane

5.   Predict the major product of acid catalysed dehydration of :

        (i) 1-Methylchclohexanol OR (ii) Butan-1-ol

6.   Give suitable reason for the following :

        a)   Nitration of phenol gives only ortho and para products

        b)   Lower alcohols can form H-bond with water, while higher alcohols cannot

7.   Complete the following reactions:
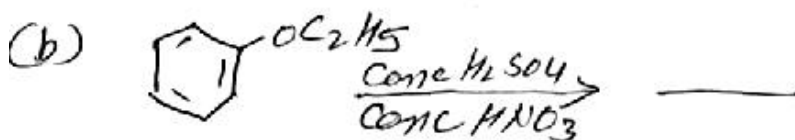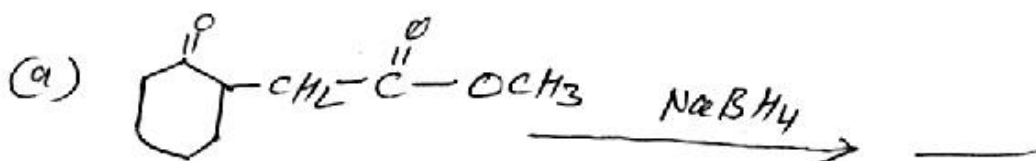
8.   Distinguish following pair with suitable chemical reactions:

        a)   Anisole and Phenol

        b)   Ether and ethamol

9.   What happens when (give equations only)

        a)   Isobutylene is treated with dilute H_2SO_4

        b)   Ethylene is treated with hypohalus acid

        c)   Phenol is treated with ice cold bromine dissolved in CS_2

10. Identify A, B and C in the following reaction:

$$B \xleftarrow[\text{(ii) dilute HCl}]{\text{(i) } CHCl_3 + NaOH} \quad \boxed{\text{phenol}} \xrightarrow[\text{273 K}]{Br_2 (CS_2)} A$$

with OH at top of ring, and downward arrow with CH_3COOH leading to C

11. C_2H_4O when reduced with $NaBH_4$ give compound B with react with HBr to form compound C optically active. Identify compound [B] and [C] and write the two eentiomers of compound [C].

12. An organic Compound (I) on treatment with $CHCl_3$ and caustic potash produce compounds (II) and (III). Both II & III give the same product (IV) when distilled with zinc dust. Oxidation of (IV) gives (V) of formula $C_7H_6O_2$. The sodium salt of (V) on heating with soda lime gives (VI) which may also be obtain by distillation of (I) with zinc-dust. Identify I to VI compounds.
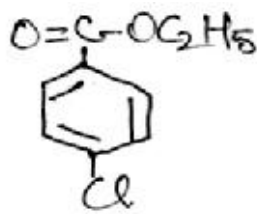
PRACTICE TEST-12

CLASS: XII

SUBJECT: CHEMISTRY

ALDEHYDES AND KETONES / CARBOXYLE ACID

Time : 50 min.   **M.M. 25**

One mark questions.

1.   Write the structure of p-methoxybenzaldehyde.

2.   Write the IUPAC name of

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

      CH_3CHO, CH_3CH_2OH, CH_3OCH_3, $CH_3CH_2CH_3$

4.   Write the chemical equation for cross aldol condensation reaction between ethanol and propanal.

5.   Draw the structure of semicarbazone of cyclobutanone.

Two marks questions.

6.   Give reason for the following :

      a)   Aldehydes are more reactive than ketones towards nucleophillic substitution reactions.

      b)   Benzoic acid has higher Ka value than acetic acid.

7.   How will you convert

      a)   Isopropyl chloride to 2-methyl propanaldehyde

      b)   Propene to Propan-1-ol

8.   Give simple tests to distinguish between the following pairs of compounds:

      a)   Benzaldehyde and Acetaophenone

      b)   Pentan-2-one and Pentan-3-one

Three marks questions

9.   Complete the following reactions:

      a) $C_6H_5COCl + H_2 \xrightarrow{Pd/BaSO_4}$

      b) $C_6H_5COCH_3 + CH_3CH_2NH_2 \xrightarrow{H^+}$

c)
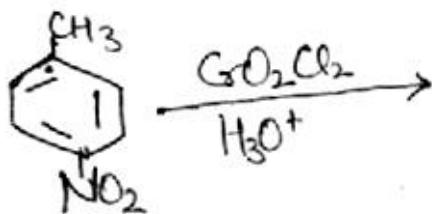
10. Identify the reagent used for the conversion

   a) Formaldehyde to propanol

   b) Benzene to acetophenone

   c) Acetaldehyde to But-2-ene-1-al

11. Give reason for the following :

   a) Carboxylic acids do not give nucleophillic addition reactions

   b) Monochloroethanoic acid is weaker acid than dichloroethanoic acid

   c) There are two NH_2 groups in semicarbazide. However, only one is involved in the formation of semicarbazones.

Five marks question

12. An organic Compound (A) having molecular formula $C_8H_{16}O_2$ was hydrolysed with dil H_2SO_4 to give a carboxylic acid (B) and an alcohol (C). Oxidation of (C) with chromic acid also produced (B). On dehydration (C) gives but-l-ene. Write the structure of (A), (B) and (C). Also write the reactions involved.

Time : 50 min.   **M.M. 25**

1.   Give IUPAC name of CH_3CH (Br) CH_2 $CONHCH_3$.

2.   Why can 1° aromatic amines not prepared by Gabriel phthalmide synthesis?

3.   Arrange in increasing basic strength

      CH_3NH_2, $(CH_3)_3N$, $(CH_3)_2NH$, $C_6H_5NH_2$

4.   Illustrate the coupling reaction with an example?

5.   Give one chemical test to distinguish between $CH_3CH_2NH_2$ and CH_3NHCH_3.

6.   Account for the following:

      a)   Electrophillic substitution in case of aromatic amine takes place more readily than benzene.

      b) CH_3CONH_2 is weaker base than $CH_3CH_2NH_2$

7.   Describe the following reactions by giving the relevant chemical equations in each case

      a)   Carbylamine reaction

      b)   Hoffmann's bromamide reaction

8.   Complete the following reactions:

      a) $CH_3CH \xrightarrow[\text{2)}NH_3,\Delta]{\text{1)}H_2O/H^+} A \xrightarrow{KOH/Br_2} B$

      b) $C_6H_5NO_2 \xrightarrow{LiAlH_4} A \xrightarrow[273K]{NaNO_2+HCl} B$

9.   Convert the following

      a)   Nitrobenzene to aniline

      b)   Ethanamine to ethanoic acid

      c)   Aniline to iodobenzene

10.   Give reason:

      a)   Aniline does not undergo Friedal-Craft reaction

      b)   Ethylamine is soluble in water whereas aniline is not

      c)   Methylamine in water reacts with ferric chloride to precipitate hydrated ferric oxide.

11. Distinguish between following pair of compounds using chemical test

    a)   Aniline and benzylamine

    b)   Aniline and N-methylaniline

    c)   N-methylaniline and N,N-dimethylaniline

12. a)   An aromatic compound 'A' on treatment with Aq. NH_3 and heating forms compound 'B' which on heating with KOH and Br_2 forms compound 'C' of molecule formula C_6H_7N. Write the structures and IUPAC names of compounds 'A', 'B' and 'C'.

    b)   Give plausible explanation for each of the following:

         i.   Why are amines less acidic than alcohol of comparable molecular masses?

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

PRACTICE TEST-14

CLASS: XII

SUBJECT: CHEMISTRY

BIOMOLECULES

Time : 50 min.   **M.M. 25**

1.   Give an example of reducing and non-reducing sugar.

2.   Which component of starch is water soluble?

3.   Define anomers?

4.   What are the product of hydrolysis of lactose?

5.   Fructose reduce 'tollen's' reagent due to?

6.   "The two strand of DNA are not identified but are complementary". Justify.

7.   What are essential and non-essential amino-acids? Give one example of each.

8.   What are the different type of RNA found in the cell?

9.   Name the main disease caused due to lack of vitamins and source of each of vitamins A, B and E.

10.   Define the following:

    a)   Nucleoside

    b)   Amino acid

    c)   Mutarotation

11.   What happens when D-glucose is treated with following reagents.

    a)   HI

    b) HNO_3

    c) Br_2 water

12.   Define the following terms:

    a)   Peptide linkage

    b)   Primary structure of protein

    c)   Globular protein

    d)   Glycosidic linkage

    e)   Oligosaccharides

Time : 50 min.   **M.M. 25**

1.   What are the monomeric repeating units of Nylon-6, and Nylon-6, 6?

2.   Define the term polymerization.

3.   Arrange in order of increasing, intermolecular forces neoprene, PVC, Nylon 6.

4.   What are elastomer?

5.   Which polymer is used for automobile tyres?

6.   Explain the term copolymerization with one example.

7.   Differentiate homopolymer and copolymer.

8.   Discuss the main purpose of vulcanisation of rubber and its importance.

9.   Write free radical mechanism for polymerization of ethene.

10.   What are biodegradable polymers? Give an example of biodegradable aliphatic polyester. How can we reduce pollution problems by using biodegradable polymers?

11.   Define thermoplastic and thermosetting polymer with suitable examples.

12.   Write the name and structure of following polymer:

    a)   Neoprene

    b)   Teflon

    c)   Bakelite

    d)   Buna-N

    e)   Dacron

PRACTICE TEST-16

CLASS: XII

SUBJECT: CHEMISTRY

CHEMISTRY IN EVERYDAY LIFE

Time : 50 min.   **M.M. 25**

1.   What are food preservatives?

2.   Why do soaps not work in hard water?

3.   Define the term chemotherapy.

4.   Name the macromolecules that are chosen as drug targets.

5.   Write the main constituents of dettol.

6.   What is tinture of Iodine? What is its use?

7.   Differentiate drugs and medicines with example.

8.   What are artificial sweetening agents? Give one example.

9.   Explain the following terms with suitable examples:

   i.   Cationic detergents

   ii.   Anionic detergents

   iii.   Non-ionic detergents

10.   How do antiseptics differ from disinfectants? Give one example of each.

11.   While antiacids and antiallergic drugs interfere with the function of histamines. Why do these not interfere with the function of each other?

12.   Ravindera went to a shop in his nearly market. He wanted to purchase soap and detergent for cleaning clothes at home in Delhi and in his school hostle at Kalshi in Uttarakhan. Shopkeeper told him to decide which one is demanded in market either soap or detergents. Please answer me being a student of science.

   Answer the following on the basis of above contest.

   a)   Soaps and detergents are needed for cleaning purpose but how they are differ in different time and places use?

   b)   How ecologically balancing behaviour is associated with soaps and detergents?

   c)   How surface tension is minimised with soaps and detergents?

   d)   How can Ravindera help to the community residing on hill areas?

   e)   Which one is economically best in use either soaps or detergents?