Preliminary Exam. 2022

Std.XII Sci.   Subject -Chemistry I & II   Marks:-70

Time :- 3 Hrs.   Dt.27/01/2022

General Instruction :-

1] The question paper is divided into four sections ABCD

1. **Section A** - Q. 1 Contains 10 multiple choice type of quesstions carrying 1 mark each.

   Q.2 Contains 8 very short answer type of question carrying 1 marks each.

2. **Section B**- Q. 3 to Q. 14 contain 12 short answer type of Questionss carrying 2 marks each. [Attempt and eight questions]

3. **Section C** - Q. 15 to Q. 26 contains 12 short answer type of Question's Carrying 3 Marks each. [Attempt any eight questions]

4. **Section D** - Q. 27 to Q. 31 contains 05 Long answer type of Question's Carrying 4 Marks each.[Attempt any THREE questions]

5. Figures to the right indicate full marks.

6. Start each section on new page.

7. For each MCQ correct answer must be written along with its alphabet.

   e.g. a] ----/(b) ----/(c) -----/ (d) ------ etc.

8. Evaluation of each MCQ would be done for the first attempt only.

9. Use of log table is allowed. use of calculator is not allowed.

Section ' A ' [Marks 10]

Q.1 Select and write the correct answer.   **10**

i] The order of reaction for which the unit of rate constant are mole $dm^3 S^{-1}$

     a] 3   b]0   c] 2   d]1

ii] When phenol is heated with conc. HNO_3 in presence of conc. H_2SO_4 it yields.

     a] 0 - nitrophenol   b] p - nitrophenol

     c] 2, 4, 6 - trinitrophenol.   d] m - nitrophenol.

iii] The pH of decimolar solution of KOH is

     a] 13   b]10   c] 4   d] 1

iv] The one step exothermic reaction is

     a] SN^1 b] SN^2 c]SN   d] S_2N

v] The molar conductance of solution of an electolyte is measured in

     a] $ohm^{-1} cm^2 mol^{-1}$ b] $ohm \, cm^{-1} mol^{-1}$

     c] $ohm^{-1} cm^{-1} mol^{-1}$ d] $ohm \, cm \, mol^{-1}$

vi] Terylene is also known as

    a]styrene   b] butadiene   c] dacron   d] teflon

vii] If the edge - length in a crystal is $a = b \neq c$ and the angle between them is $\alpha = \beta = \gamma = 90^0$ what type of crystal lattice is it ?

    a] monoclinic   b] triclinic   c] orthorhombic   d] tetragonal

viii] Which of the following is the example of disaccharide

    a] Glucose   b] Raffinose c] Cellulose   d] Sucrose

ix] 30g of glucose dissolved in one litre of water has an osmotic pressure 4.91 atm at 303 k. If the osmotic pressure of the glucose solution is 1.5 atm at the same temperature, its concentrati on would be.

    a] 50.09m   b] 0.050gm c] 0.509m   d] 5.09m

x] The iodoalkanes can be prepared from corresponding chloro or bromo alkanes by heating with NaI in acetone or methanol, this reaction is allowed

    a] Etard reaction   b] Swarts reaction

    c] Finkelstein reaction   d] Bimbaum - Simonini reaction

Q.2 Answers the follownng   8

i] Draw the structure of pyrosulphuric Acid

ii] Complete the reaction
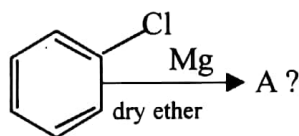
iii] Name the Lewis Acids and bases in the complex $[Pt Cl_2 (NH_3)_2]$

iv] Which nanomaterial is used for tyres of car to increase the life of tyres ?

v] What is cell constant ?

vi] Give an example each of reducing and non reducing sugars

vii] Write any two functions of salt bridge

viii] Draw the structure 4 - Methylbenzoic acid.

<div align="center">SECTION B [16 Marks]</div>

Attempt any Eight

Q.3   Define   a] Isotonic solutions

                    b] Osmotic pressure

Q. 4   How is phenol prepared from

              a] Aniline   b] Chlorobenzene

Q. 5 What are conjugate Acid - Base pairs ? Write the conjugate Acid $HSO_4^{\ominus}$

Q.6 Write chemical reaction involved in preparation of Nylon - 66

Q.7 State the conditions when the work done by the gas is zero.

Q.8 How are proteins classified on the basis of molecular shapes.

Q.9 Define standard oxidation potential and write the Nernst's equation for oxidations electrode.

Q.10 Give the IUPAC names for the following

a]
$$CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2OH$$

b]
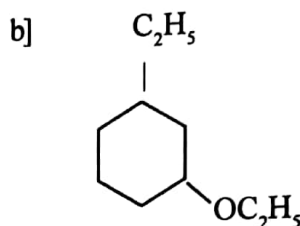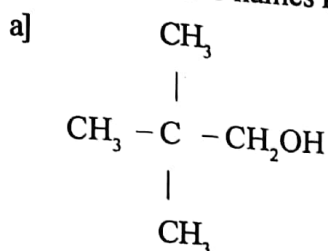
Q.11 The molar conductivity of 0.05 M $BaCl_2$ solution at 25°C is 223 $\Omega^{-1} cm^2 mol^{-1}$ What is it's conductivity

Q.12 Write a note on friedel craft's acylation

Q.13 Distinguish between order of reaction and molecularity

Q.14 Write the IUPAC names of the following corordination compounds.

a] $[Cu(NH_3)_4]Cl_2$ b] $[Fe(CO)_5]$

SECTION C [24Marks]

Attempt any EIght

Q.15 What is solubility ? State and explain henry's law

Q.16 Define ligand ?Write four Postulates of Werner's theory

Q.17 What is unit cell / Calculae the paking efficiency of metal crystal that has simple cubic structure.

Q.18 How will you converts the following.

a] Toluene to benzoic acid.   b] Ethyl benzoate to benzoic acid.

c] Ethylamine to ethyl alcohol

Q.19 Derive the expression for the maximum work

Q. 20 What are monosaccharides. Give the preparation of glucose from starch.

Q.21 Explain most of transition metal compounds are coloured.

Write the electronic configuration of samarium.[z = 62]

Q. 22 On the basis of Valence bond theory explain the nature of bonding in $[COF_6]^{3-}$

Q..23 Explain the trends in Ionisation enthalpy of 16,17 and 18 group elements.

Q.24 What are amines ?

Complete the following reaction

a] $C_6H_5N_2^{\oplus}Cl^{\ominus} + C_2H_5OH \longrightarrow$? b] $C_6H_5NH_2 + Br_{2(aq)} \longrightarrow$?

Q.25 Predict whether Ag^+ ion can oxidise Pb to Pb^{2+} under standard state conditions ? $E^0Ag = 0.799V$, $E^0pb = -0.126v$

Q.26 a] Explain atom economy with suitable example.

b] Drw structure of BHT

SECTION D [12 Marks]

Attempt any THREE

Q.27 What is action of chlorine on excess of NH_3 ?

What is pseudo - first order reaction ? Explain it with suitable example ?

Q.28 a] Write a note on aldol condensation.

b] How will you convert Ethene to ethyl bromide

Q.29 The enthalpy change for the reaction $C_2H_{4(g)} + H_{2(g)} \longrightarrow C_2H_{6(g)}$ is - 620J

When 100 ml of ethylene and 100 ml of H_2 react at 1 atmospheric pressure. Calculate pressure - volume type work and ΔU. What are interstial compounds

Q.30 a] Predict the products for the following reaction.

b] $CH_3 - CH = CH - CHO$ i] $\underset{H_3O^+}{\overset{LiAlH_4}{\longrightarrow}}$

ii] $H - \overset{\overset{O}{\|}}{C} - OC_2H_5 \xrightarrow{\underset{\Delta}{Ni/Pd.H_2}}$

b] Explain Haloarenes are less reactive than halo alkanes.

Q.31 Write any two uses of Neon. What is half life ?

Derive the relationship between half life and rate constant for the first order reaction.