CLASS XII
SAMPLE PAPER-01
CHEMISTRY

TIME- 3Hrs.   **MM.-70**

General Instructions :
1. **All questions are compulsory.**
2. **Question Nos. 1 to 5 are very short answer questions and carry 1 mark each.**
3. **Question Nos. 6 to 10 are short answer questions and carry 2 mark each.**
4. **Question Nos. 11 to 22 are short answer questions and carry 3 mark each.**
5. **Question Nos. 23 carry 4 mark each**
6. **Question Nos. 24 to 26 are long answer questions and carry 5 mark each.**
7. **Use log tables if necessary, use of calculators is not allowed**

Q1)   What is Colloidion?

Q2)   Write IUPAC name of $(CH_3)_3$ C-OH.

Q3)   Aluminum crystallizes in C.C.P structure its metallic radius is 115 Pm. Calculate how many unit cells are there in 100 cm3 of aluminum?

Q4)   What is the desalination of sea water and how can it carried out? What is its principle.

Q5)   Why salt bridge is used in electrochemical cell .Write its function ?

Q6)   What is Henry's law ?
                          OR
            Why NCl_3 is known but NCl_5 does not?

Q7)   What is NiCad cell. Write Chemical equations of cell.

Q8)   Analysis shows that Nickel Oxide has formula $Ni_{0.98}$ $O_{1.00}$. What fraction of Nickel exist as Ni^{2+} and Ni^{3+} ions?

Q9)   Ferric Oxide crystallizes in a hexagonal close packed array of oxide ions with two out of every three octahedral holes occupied by ferric ions. Derive the formula of Ferric Oxide.

Q10)   Two elements A and B forms compound AB_2 and AB_4. When dissolved in 20g of Benzene (C_6H_6), 1g of AB_2 lowers the freezing point by 2.3K where as 1.0g of AB_4 lowers it by 1.3K. The molar depression constant for benzene is 5.1Kkg mol^{-1}. Calculate atomic moss of A and B.

Q11)   A decimolar solution of K4[Fe(CN)6] is 50% dissociated at 300K. Calculate osmotic pressure of solution. (R=8.314 J/K mol)

Q12)   The resistance of a conductivity cell containing 0.001M Kcl solution at 298K is 1500Ω. What is the cell constant if conductivity of 0.001M Kcl solution at 298K is 0.146x10^{-3} 8cm^{-1}.

Q13)   Show that in a first order reaction time required for completion of 99% is 10 times of half of the reaction.

Q14) Explain:-   i)   Peptization
            ii)   Coagulation

Q15) Write the difference between zone and vapour phase refining with their principle used.

Q16) Draw any two structure of –
i) XeO_2F_2 ,   ii) $(HPO_3)_3$,   iii) H_3PO_3 , iv) PCl_5 (solid)

Q17) Write short notes on
 (i) Swats Reaction (ii) Friedel Craft Acylation Reaction?

Q18) Explain The structure of DDT & BHC .

Q19) Explain the mechanism of SN^2. Reaction.
                    OR

Why explain .
i)   All the bonds in PCl_5 are not equal.
ii) PCl_3 fumes in air.
iii) NCl_5 does not exist but PCl_5 exist

Q20) Arrange-
i)   HF,   Hcl,   HBr,   HI   (Increasing acidic character)
ii) NH_3, AsH_3, PH_3, BiH_3 (Increasing reducing character)
                OR
How H_2SO_4 is manufactured by contact process. Write favorable condition with reaction.

Q21) Write chemical reactions perform in blast furnace in metallurgy of Iron **or** in bessemer converters in the metallurgy of Cu?
                 OR

Complete following reaction-
i) NH_3 $+Cl_2$ (excess)   →
ii) XeF_6 $+ H_2O$ (excess)   →

Q22) Explain .
i) NO_2 dimerises.
ii) NH_3 is more basic tha PH_3.
iii) H_3PO_3 is monobasic

Q23   At Battery shop in shahjahanpur. Hanu bought Lead storage battery . he asked to shopkeeper about the dilution and type of acid used in the battery Shopekeeper told that Gandhak ka tejab .He also suggested that put this battery away from bed room in open area in the house .

Answer the following questions.

(i) What is the dilution of lead storage battery..

(ii) Name the acid used in lead storage battery.

Iii) Suggest value to keep battery in open area .

Q24) Define (I) Reverse osmosis (ii)   Molecularity (iii)   Auto reduction with reaction

OR

The rate of R^n quadruples when the temperature change from 293K to 313 K. Calculate the energy of activation of R^n assuming that it does not change with temperature.

Q25) (a)   Carry out following conversions
(i)   Ethanol to But -1-yne
(ii)   ChloroBenzene to Phenol
(iii)   Chloro Benzene to Diphenyl
(b)   Distinguish between the following
(i)   Ideal and non ideal solution
(ii)   EMF   and cell potential

OR

(a)   Complete the following chemical equations for reactions:-
i) $CH_3Cl + NaI \rightarrow$
ii) $(CH3)3C\text{-}Br + KOH (alc) \rightarrow$
(b)   Give an explanation for each of the following observations:-
i)   The alky halides on reaction with KCN to form cyanide while on reaction AgCN to form Isocyanide
ii)   why ethanol is added in the bottles of chloroform.
iii)   Why chloroform is kept in air tight dark coloured bottles .

26)   (a)   Define molar conductivity of a substances and describe how for weak and strong electrolytes, molar conductivity changes with concentration of solution. How is such change explained ?
(b)   A voltaic cell is setup at 25°C with the following half cells:-
Ag^+ (0.001M)/Ag and Cu^{2+} (0.10M)/Cu
what would be the voltage of this cell ? ($E°_{cell} = 0.46v$)

OR

(a)State the relationship amongst cell constant of a cell, resistance of the solution in the cell and conductivity of the solution. How is molar conductivity of a solute related to conductivity of its solution.
(b)   A voltaic cell is setup at 25°C with following half cells:-
Al/Al^{3+} (0.001M) and Ni/Ni^{2+} (0.50M)
Calculate the cell voltage [$E°Ni^{2+}$ = - 0.25v, $E°Al^{3+}/Al$ = -1.66]

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