CBSE SAMPLE PAPER -2015
EQUILIBRIUM CLASSES SHAHJAHANPUR
SUBJECT-CHEMISTRY-CBSE

CLASS- XII   MM. – 70
TIME- 3Hrs.

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)   Define Henry Law?
Q2)   Write IUPAC name of $[Co(NH_3)_5NO_2]Cl_2$.
Q3)   Aluminum crystallizes in C.C.P structure its metallic radius is 125 Pm. Calculate how many unit
        cells are there in $100cm^3$ of aluminum?
Q4)   What is the desalination of sea water and how can it carried out? What is its principle.
Q5)   Why cell stop working after sometime explain with proper reason?
Q6)   What is colloidian?   OR   Why SF_6 is known but SCl_4 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 $5.1 Kkg mol^{-1}$. 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 $0.146 \times 10^{-3} 8cm^{-1}$.
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)   Electrophoresis
                          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) XeO_3
Q17) $[Cr(NH_3)_6]^{3+}$ is paramagnetic and $[Ni(CN)_4]^{2-}$ is diamagnetic why?

Q18) $[Ti(H_2O)_6]^{3+}$ is violet why $[Zn(OH)_4]^{2-}$ is colourless?

Q19) What is chelating ligends? Draw structure of E.D.T.A.

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 monofactured by contact process. Write favorable condition with reaction.

Q21) Write chemical reactions perform in blast furnace or in bessemer converters?

OR

Complete following reaction-
i) MnO_4^- + Fe^{2+} + H^+ $\rightarrow$
ii) $Cr_2O_7^{--}$ + Fe^{2+} + H^+ $\rightarrow$

Q22) Explain any five-
i) $La(OH)_3$ is more basic than $Lu(OH)_3$.
ii) NH_3 is more basic tha PH_3.
iii) H_3PO_3 is monobasic

Q23   At sweet shop in shahjahanpur. Rimjhim bought somesweets. She asked to shopkeeper to put sweet in poly thene bags but he refused to keep the sweet in polythene bag and put the sweet in paper bag.

Answer the following questions.

(i) Why did the shopekeeper refuse to put sweet in poly thene bag.

(ii) Why would you suggest the use of paper bags instead of poly thene bags.

Iii) Suggest two activities to promote these values.

Q24) $[NiCl_4]^{2-}$ is paramagnetic while $[Ni(CO)_4]$ is diamagnetic though both a tetrahedral Why?   OR

The rate of R^n quadruples when the temperature change from293K to 313 K.

Calculate the energy of activation of R^n assuming that it does not change with temperature.

Q25) (a) Complete the following chemical reactions equations:-
i) MnO_4^- (ag) + $C_2O_4^{2-}$ (ag)+H^+(ag) $\rightarrow$
ii) $Cr_2O_7^{2-}$ (ag) + Fe^{2+}(ag) + H^+(ag) $\rightarrow$

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(b) Explain the following observation about the transition/inner transition elements:

i)There is in general an increase in density of element from Ti (Z=22) to Cu(Z=29).

ii)There occurs much more frequent metal-metal bonding in compounds
of heavy transition elements (3rd series).

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

<center>OR</center>

(a)   Complete the following chemical equations for reactions:-

    i) MnO_{4^-} (ag) + $S_2O_3^{2^-}$(ag)+H_2OC^+(l)   →

    ii) Cr_2O_7 (ag) + H_2S(g) + H^+(ag)   →

(b)   Give an explanation for each of the following observations:-

    i)   The gradual decrease in size (actinoid contraction) from element to
element is greater among theactinoids that among the lanthanoids
(lanthanoid contraction)

    ii)   The greatest number of oxidation states are exhibited by the members
in the middle of transition series.

    iii)   With the same d-orbital configuration (d^4) Cr^{2+} ion is reading agent but
Mn^{3+} is an oxidizing agent.

26)   (a)   Define molar conductivity of a substances and describe how for weak and
strong electrolytes, molar conductivity changes with concentration ofsolution.
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)

<center>OR</center>

(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]

***************************BEST OF LUCK STUDENTS***********************

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