SAMPLE PAPER

CLASS – XI

CHEMISTRY

Time : 3 hrs   MM:70

General Instruction :

1. All questions are compulsory.

2. Q.No.1-8 are very short answer question, carrying 1 mark each. Answer these in one word or about one sentence each.

3. Q.No. 9-18 are short answers question , carrying 2 marks each. Answer in about 30 words each.

4. Q.19-27 are also short answers questions, carrying 3 marks each. Answer in about 40words each.

5. Q.28 – 30 are long answers questions of 5 marks each. Answer these in about 70 words each.

6. Use of log tables if necessary .Use of calculator is not permitted.

1. How are 0.5 m of NaOH different from 0.5 M of NaOH?

2. Write the electronic configuration of O_2^-.

3. What is the basic difference between electron gain enthalpy & electro negativity?

4. Under what condition of temperature and pressure do real gases tend to show ideal gas behaviour?

5. Predict in which of the following entropy decreases / increases:

    i)   A liquid crystallizes into a solid.

    ii) $H_2 (g) \longrightarrow 2H(g)$

6. For the following equilibrium Kp = 6.3×10^{14} at 1000k

    $NO(g) + O_3(g) \rightleftharpoons NO_2(g) + O_2(g)$
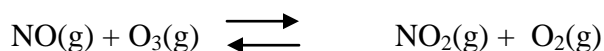
    What is Kp for the reverse reaction?

7. Assign the oxidation number to Mn in $K_2MnO_4.$

8. Write the IUPAC name $CH_3CH = C(CH_3)_2.$

9. What is the concentration of sugar ($C_{12}H_{11}O_{22}$) in mol L^{-1} if 20g of it is dissolved in enough water to make final volume up to 2L?

10. Calculate the mass of a photon with wavelength $3.6A^0$. [h = 6.626×10^{-34} Js].

11. What is meant by 'Polar Covalent Bond '? Give suitable example.

Or

Different sigma[σ] and pi[π] bond.

12. State Hess's law of Constant Heat Summation by giving an example.

13. For the Galvanic cell reaction :

1

$$Zn (s) + 2Ag^+ (aq) \longrightarrow Zn^{2+}(aq) + 2Ag(s)$$
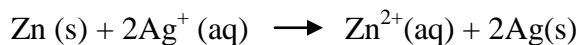
    i)   which electrode is negatively charged?

    ii)   What is the direction of current?

14. Account for the following :

    i) KO_2 parameganetic.

    ii)   LiI iodide is more soluble than KI in ethanol.

15. Draw resonating structure of CO_3^{2-} & state the hybridization of carbon in it.

16. Write bond line structural formula for :

   i) Isopropyl alcohol   ii) 2,2,4- Trimethylpentane.

17. State the principle of the following techniques taking an example in each case:

   i) Distillation under reduced pressure.

   ii) Chromatography.

18. What do you understand by the Inductive effect?

   How will this justify the following order of acidic strength:

   $CH_3CH_2COOH > (CH_3)_2CHCOOH > (CH_3)_3COOH$

19. a) State Heisenberg's Uncertainty Principle.

   b) Using s, p, d, f notations, describe the orbital with following quantum numbers :

     i)   n=2, l=1

     ii)   n = 4, l =0

     iii)   n =5, l=3

     iv)   n-3, l =2

20. Predict the formula of the binary compound formed by the combination of the following pairs of elements :

     i)   Magnesium and nitrogen.

     ii)   Phosphorous and fluorine

     iii)   Aluminum and iodine.

21. Define Hybridisation . State the hybridization & the shape of PCl_5 and BeF_2.

22. a) Which type of intermolecular forces exist between KI & I_2.

   b) What will be the pressure of the gaseous mixture when 0.5 L of H_2 at 0.8 bar and 2.0L of O_2 at 0.7 bar are introduced in a 1L vessal at 27^0 C?

 23. The equilibrium constant for a reaction is 10. What will be the value of ΔG^o ?

24. What are electron deficient, electron precise and electron rich compounds of hydrogen? Give one example of each.

Or

What do you understand by the following terms :

 i) Demineralised water

 ii) Auto – protdysis of water.

 iii) Hydride Gap?

25. What happens when :

 i) Sodium peroxide dissolves in water.

 ii) Lithium nitrate is heated.

 Iii) Quick lime is heated with silica?

26. a) Why is an organic compound fused with sodium for testing nitrogen, halogen and sulphur ?

 b) In the estimation of sulphur by Carius method , 0.468 g of an organic sulphur compound gives 0.668 g of barium sulphate. Find the percentage of sulphur in the given compound . [At mass : Ba = 137μ, S - 32μ , O =16μ]

27. What is smog? How is classical smog different from photochemical smog?

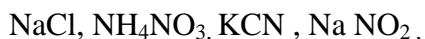28. a) Find the conjugate acid / base for the following species :

$$HF, CN^-, NH_4^+, HCO_3^-$$

 b) The ionization constant of HCOOH & HCN at 298 K are 1.8×10^{-4} , and 4.8×10^{-9} respectively. Calculate the ionization constant of the corresponding conjugated bases.

Or

a) Predict if the solutions of the following salts are neutral, acid or basic :

 $NaCl, NH_4NO_3, KCN , Na NO_2$,

b) State Le Chatelier 's principle . Give the effect of pressure change & temperature change on the state of equilibrium giving example.

29. a) A certain salt 'X' in its aqueous solution is alkaline :

 i) It swells up to a glassy martial 'Y'.

 ii) Its hot solution on treatment with conc. H_2SO_4 gives white crystals of an acid 'Z' Identify 'X',

'Y' and 'Z' an give the chemical reactions.

b) What do you understand by:

i) Inert pair effect.

ii) Ionozation Enthalpy

Or

a) Complete and balance the following equation :

i) $B_2H_6 + NH_3$[]

ii) $Al + NaOH + H_2O$[]

b) Give reasons :

i) Graphite is used as lubricant.

ii) Conc. HNO_3 can be transported in aluminum container.

iii) Co is poisonous in nature.

30. a) Give the chemical equations for the following reaction :

i) Freidel – Crafts' reaction

ii) Ozonolysis

iii) Wurtz reaction.

b) Account for the following :

i) Benzene is extra – ordinary stable through it contains three double bonds.

ii) Out of toluene , benzene , m-dinitrobenzene , toluene will undergo nitration most easily.

Or

a) Sate Markovnikov rule. Write IUPAC name of the product obtained by addition reaction of HBr to hex-1-ene.

b) What happens when : [Give chemical equations]

i) Butane undergoes complete combustion.

ii) Ethanol is heated with conc. H_2SO_4.

iii) Ethyne is passed through red hot iron tube at 873K.