

SAMPLE PAPER

CLASS – XI

CHEMISTRY

Time : 3 hrs

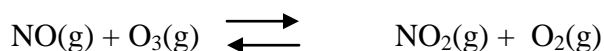
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General Instruction :

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 $K_p = 6.3 \times 10^{14}$ at 1000k



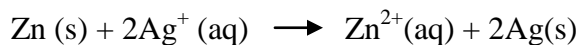
What is K_p for the reverse reaction?

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 ($C_{12}H_{22}O_{11}$) 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 $3.6 \times 10^{-7} m$. [$h = 6.626 \times 10^{-34} Js$].
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 :



- i) which electrode is negatively charged?
- ii) What is the direction of current?

14. Account for the following :

- i) KO_2 paramagnetic.
- 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:



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 vessel at 27°C ?

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

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 – protolysis 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 = 137, S = 32, O = 16]

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

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

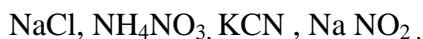


b) The ionization constant of HCOOH & HCN at 298 K are 1.8×10^{-4} , and 4.8×10^{-9} respectively.

Calculate the ionization constant of the corresponding conjugated bases.

Or

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



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 material '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.