

Final Paper (8 March 2016)

Class XI Paper- CHEMISTRY (Set- B)

Time: 3hrs.

M.M. 70

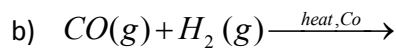
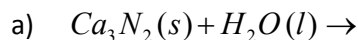
- i) All questions are compulsory.
 - ii) Q 1 – 5 carry 1 mark each.
 - iii) Q 6 – 10 carry 2 mark each.
 - iv) Q11 – 22 carry 3 marks each.
 - v) Q 23 carry 4 mark.
 - vi) Q24 – 26 carry 5 marks each.
- Q1. Which type of isomerism is present in $\text{CH}_3\text{CH}_2\text{OH}$ and CH_3OCH_3 ?
- Q2. Write increasing order of stability in primary, secondary and tertiary carbanion.
- Q3. What are extensive properties? Give examples.
- Q4. Indicate the number of σ and π bonds in the molecule $\text{CH}_2 = \text{CH} - \text{CH}_3$.
- Q5. What is inversion temperature?
- Q6. Why structure of NH_3 molecule is pyramidal?
- Q7. Explain the shapes of the following on the basis of VSEPR theory.
- a) BCl_3
 - b) PF_5
- Q8. Write the conditions of temperature and pressure when gases deviate most from the ideal behaviour? Write real gas equation for n moles of a gas.
- Q9. A mixture of dihydrogen and dioxygen at one bar pressure contains 20% by weight of dihydrogen. Calculate the partial pressure of dihydrogen.
- Q10. Diamond is covalent, yet it has high melting point.

OR

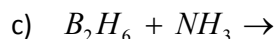
Atomic radius of gallium is less than that of aluminium.

- Q11. Explain the following:
- a) Anti-Markonikov rule
 - b) Decarboylation
 - c) Friedel-Crafts Alkylation
- Q12. Write IUPAC name of
- i) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH} - \text{COOH}$
 - ii) $\text{CH}_3 - \text{C} - \text{CH}_2 - \text{CH}_2 - \text{CHO}$
 - iii) $\text{CH}_3 - \text{C}(\text{CH}_3 - \text{CH}_3)_2 - \text{CH} = \text{CH}_2$

Q13. Complete the following reactions:



Q14. Write balanced equations for:



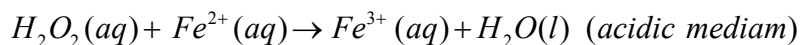
Q15. Give reasons for the following statements:

a) Why BCl_3 is monomer but BH_3 exists as B_2H_6 .

b) Stability of +3 oxidation state progressively decreases for the heavier elements of Group 13.

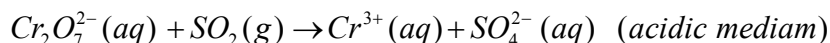
c) Diamond is used as an abrasive.

Q16. Balance the following redox equation by ion-electron method.



OR

Balance the following redox reaction by ion-electron method.



Q17.a) Depict the galvanic cell in which the reaction $Zn(s) + 2Ag^+(aq) \rightarrow Zn^{2+}(aq) + 2Ag(s)$ takes place. Further show:

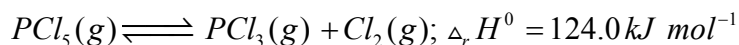
i) Which of the electrode is negatively charged.

ii) The carriers of the current in the cell, and

iii) Individual reaction at each electrode.

b) What is disproportionation reaction? Give example.

Q18. At 473 K, equilibrium constant, K_c for decomposition of phosphorus pentachloride, PCl_5 is 8.3×10^{-3} .



a) Write an expression for K_c for the reaction?

b) What is the value of K_c for the reverse reaction at the same temperature?

c) What would be the effect on K_c if

(i) more PCl_5 is added

(ii) pressure is increased

(iii) temperature is increased

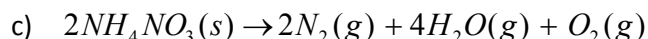
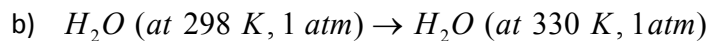
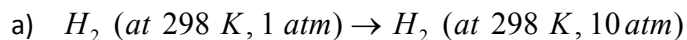
Q19. Write the molecular orbital configuration of O_2^+ . Calculate its bond order and predict its magnetic behaviour.

Q20. i) What is Compressibility factor Z?

ii) What is the value of Z for an ideal and non ideal gas?

iii) For real gas what will the effect on value of Z above Boyle's temperature?

Q21. i) What is meant by entropy? Predict the sign of entropy change in each of the followingL

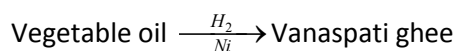


ii) Identify the state functions and path functions:

Enthalpy, Entropy, Heat and Temperature

Q22.

Q23. Mr. Desh Kumar uses Dalda ghee at his home. He has high blood pressure and diabetes. Doctor has advised him to change ghee to vegetable oil like mustard oil. Dihydrogen is used in manufacture of vanaspati ghee by hydrogenation of polyunsaturated vegetable oils using nickel as a catalyst.



- i) Should we use vanaspati ghee in our cooking? Give reason.
- ii) Should we use vegetable oils for cooking? Why?
- iii) Why are olive oil, mustard oil, rice bran oil better than others?
- iv) What is meant by MUFA and PUFA?

Q24. i) Define butter solution.

ii) The solubility of $Sr(OH)_2$ at 298 K is 19.23 g/L of solution. Calculate the concentration of strontium and hydroxyl ions and the pH of the solution

iii) The species H_2O , HCO_3^- and CO_3^{2-} act both as Bronsted acids and bases. Give the corresponding conjugate acid and base.

OR

- i) What is the relationship between K_p and K_c ?
- ii) The solubility of CaF_2 in water at 298 K is 1.7×10^{-3} gram per 100 ml of the solution. Calculate solubility product of CaF_2 .
- iii) Classify the following species into Lewis acids and Lewis base
 - a) OH^-
 - b) F^-
 - c) H^+
 - d) BCl_3

- Q25. a) What are nucleophiles? Give one example of nucleophilic addition reaction.
b) Write the chemistry of Lassaigne's test for qualitative analysis of Halogens.
c) Give one example of functional isomerism.

OR

- a) Name a method used to separate:
i) Glycerol from spent lye in soap industry.
ii) Aniline from aniline-water mixture
b) Define empirical formula with example.
c) Calculate the percentage of S in an organic compound of 0.2175g, which in the Carius method, gave 0.5825 g of BaSO₄.
- Q26. a) Give two reactions to show acidic character of alkynes.
b) Complete the following reactions:

OR

- a) Depict the Newman's projections of ethane.
b) -NO₂ group attached to benzene ring is meta directing whereas -OH group is ortho and para directing. Explain why?
c) Complete the following reactions: