CBSE Question Paper 2019 (Set-2)

Class 11 Chemistry

MPVM Gangagurukulam

Duration: 3 hrs.

M.Marks: 70

General Instructions:

i. Q1 - 5 are of 1 marks each.
ii. Q6 - 10 are of 2 marks each.
iii. Q11-23 are of 3 marks each.
iv. Q24 is of 4 marks.
v. Q25 - 27 are of 5 marks each.

1. BF_3 does not have proton but still acts as an acid. Why?
2. Write the IUPAC name of the following compound: Br - CH_2-CH=CH-COOH.
3. Arrange the following elements in the increasing order of electronegativity Si, C, P and N.
4. Give one example of disproportionation reaction.
5. What is the slope between PV and P at constant temperature?
6. What will be the molality of the solution containing 18.25 g of HCl gas in 500 g of water?
7. On the basis of VSEPR theory, explain the shape of ClF_6 and SF_4.
8. Complete the following reactions:
   i. $2CH_3Br + 2Na \xrightarrow{\text{dry ether}}$
   ii. $CH_2CH_2CH_2Cl \xrightarrow[\text{alc.KOH}]{\Delta}$
9. The equilibrium constant K_p for the thermal dissociation of PCl_5 at 200° C is 1.6 atm. What is the pressure at which it is 50% dissociated?
10. Write short notes on:
    i. Acid rain
    ii. Green house effect
11. The density of certain gaseous oxide at 1.5 bar pressure at 10°C is same as that of dioxygen at 20° C & 4.5 bar pressure. Calculate the molar mass of gaseous oxide.

12. What causes the temporary & permanent hardness of water? Explain one method for the removal of permanent hardness.
13. In an organic compound C, H & N are present in the 9: 1 : 3.5 ratio by weight if molecular weight of the compound is 108, then calculate the molecular formula of the compound.
14. How would you account for the following:
    i. $Ti(NO_2)_3$ acts as an oxidizing agent.
    ii. Although B - Cl has a dipole moment but still BCl_3 is a non - polar molecule
    iii. Complete the following reaction:
    $PbO_3 + NaOH \rightarrow$
15. i. Why is NF_3 pyramidal but BCl_3 is a non - polar molecule
    ii. Which d - orbital is involved in sp^3d hybridisation?
    iii. Solubility of $MgCl_2$ much greater than MgF_2, Why?
16. Write balanced chemical equation for the reaction of potassium permanganate with oxalic acid & potassium dichromate with potassium iodide in acidic medium.
17. Explain why:
    i. Electron affinity is positive when O changes into O^{2-}.
    ii. Be has higher first I.E than B.
    iii. Cl has more negative electron gain enthalpy than F.
18. i. The electron configuration of a dipositive ion M^{2+} is 2, 8, 14 & it's mass number is 56. How many neutrons are present in It?
    ii. What Is the most probable radius for finding the electron in He^+
    iii. What is the shape of the orbital with the value of l = 2 & m = 0?
19. i. What is the hybridisation of each carbon in $H_2C=C=CH_2$?
    ii. Show the polarization of carbon - magnesium bond in the following structure:
    CH_3-CH_2-CH_2-CH_2-MgX
    iii. Draw the possible resonance structures for $CH_3 - \ddot{O} - CH = CH_3$
20. Explain the following terms:
    i. Hund's rule
    ii. Heisenberg's Uncertainty Principle.
    iii. Quantum number
21. The combustion of 1 mole of benzene takes place at 298 K and 1 atm. After combustion

$CO_2(g)$ and $H_2O(l)$ are formed and 3267 kJ of heat is liberated. Calculate standard enthalpy of formation of benzene. Given $\Delta_f H^o$ of $CO_2(g)$ and $H_2O(l)$ as - 393.5 kJ/mol and - 285.83 kJ/mol respectively.

22. Explain the following
    i. Solubility product
    ii. Lewis acid
    iii. Buffer solution
23. Rahul went to market to buy fruits and vegetable. The vendor put the fruits and vegetables in the polythene bag but Rahul asks the vendor to put the things In the Jute beg which he had carried with him.
    Answer the following Questions:
    i. Why did Rahul refused to use polythene bag?
    ii. As a chemistry student, why would you advocate the use of jute bags instead of polythene bags?
    iii. What are the values possessed by Rahul?
    iv. Suggest two activities to ban the use of polythene bags.
24. What are reaction intermediates? Explain the stability of carbocations and carbanions on the basis of inductive effect.
25. i. Explain why
        a. Boron forms electron deficient compounds.
        b. Aluminium chloride exists as a dimer.
        c. BBr_3 is a stronger acid than BF_3.
    ii. Explain the structure of diborane.
26. i. Explain the mechanism of Freidal crafts Alkylation reaction.
    ii. Explain the following reactions with examples: (a) Wurtz reaction (b) Nitration of Benzene (c)Ozonolysis of Alkenes.