Class : 11

Register Number | | | | | | | |

FIRST REVISION EXAMINATION, JANUARY - 2025

Time Allowed : 3.00 Hours] **CHEMISTRY** **[Max. Marks : 70**

PART – I

I. Answer the following: **15x1=15**

1. Which of the following contain same number of carbon atoms as in 6 g of carbon-12.
   (a) 7.5 g ethane (b) 8 g methane (c) both (a) and (b) (d) None of these
2. The energy of light of wavelength 45 nm is
   (a) 6.67×10^{15} J (b) 6.67×10^{11} J (c) 4.42×10^{-18} J (d) 4.42×10^{-15} J
3. How does electron affinity change when we move from left to right in a period in the periodic table?
   (a) Generally increases (b) Generally decreases
   (c) Remains unchanged (d) First increases and then decreases
4. Ionic hydrides are formed by
   (a) Halogens (b) Chalcogens (c) Inert gases (d) Group one elements
5. The product obtained as a result of a reaction of nitrogen with CaC_2 is
   (a) $Ca(CN)_3$ (b) CaN_2 (c) $Ca(CN)_2$ (d) Ca_3N_2
6. What is the density of N_2 gas at 227°C and 5.00 atm pressures?
   (a) 1.40 g / L (b) 2.81 g / L (c) 3.41 g / L (d) 0.29 g / L
7. The correct thermodynamic conditions for the spontaneous reaction at all temperature is
   (a) $\Delta H < 0$ and $\Delta S > 0$ (b) $\Delta H < 0$ and $\Delta S < 0$
   (c) $\Delta H > 0$ and $\Delta S = 0$ (d) $\Delta H > 0$ and $\Delta S > 0$
8. K_c / K_p for the reaction $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ is
   (a) $\frac{1}{RT}$ (b) $\sqrt{RT}$ (c) RT (d) $(RT)^2$
9. According to Raoults law, the relative lowering of vapour pressure for a solution is equal to
   (a) Mole fraction of solvent (b) Mole fraction of solute
   (c) Number of moles of solute (d) Number of moles of solvent
10. Shape of ClF_3 is
    (a) Planar triangular (b) Pyramidal (c) 'T' Shaped (d) None of these
11. A liquid which decomposes at its boiling point can be purified by
    (a) Distillation at atmospheric pressure (b) Distillation under reduced pressure
    (c) Fractional distillation (d) Steam distillation.
12. A miscible mixture of benzene and nitrobenzene can be separated by the method is
    (a) Sublimation (b) Distillation (c) Filtration (d) Crystallisation
13. The general formula for cyclo alkanes
    (a) C_nH_n (b) C_nH_{2n} (c) C_nH_{2n-2} (d) C_nH_{2n+2}
14. C -X bond is strongest in
    (a) Chloromethane (b) Iodomethane (c) Bromomethane (d) Fluoromethane
15. Biochemical oxygen Demand value less than 5 ppm indicates a water sample to be
    (a) Highly polluted (b) Poor in dissolved oxygen
    (c) Rich in dissolved oxygen (d) Low COD

PART - II

Answer any 6 questions. Q.No. 24 is compulsory **6x2=12**

16. Find the radial nodes and angular nodes in 2s and 4p orbitals.
17. Why ionisation energy of nitrogen is greater than oxygen?
18. State Dalton's law of partial pressure.
19. State law of mass action.

20. Draw the Lewis structure of HNO_3.
21. What is homologous series?
22. Write Wurts Fittig reaction.
23. Define stone leprosy.
24. Complete the followings
    i) $KMnO_4 + H_2O_2 \rightarrow$ ii) $CrCl_3 + H_2O \rightarrow$

PART - III

Answer any 6 questions. Q.No. 33 is compulsory **6x3=18**

25. Find molar mass of Boric acid (H_3BO_3).
26. Explain why the electron affinity of Be and N is almost zero?
27. Give the systematic names for the followings
    a) Lime b) Caustic potash c) Washing soda
28. Mention the differences between ideal and non ideal solutions.
29. Define Bond angle.
30. What is asymmetric carbon or chiral carbon?
31. Explain Hyperconjugation.
32. Write Aromatization.
33. If an automobile engine burns petrol at a temperature of 816°C and if the surrounding temperature is 21°C. Calculate its maximum possible efficiency.

PART - IV

Answer all the questions. Q.No. 38 is compulsory **5x5=25**

34. a) An organic compound present in vinegar has 40% of carbon, 6.6% hydrogen and 53.4% oxygen. Find the empirical formula of the compound. (5)

    (OR)

    b) i) What is Newland's law of octaves? (2).
    ii) What is permanent hardness of water? (3).
35. a) i) How is bleaching powder prepared? (2).
    ii) What is Boyle's temperature (Boyle point)? (3).

    (OR)

    b) Suggest and explain an indirect method to calculate lattice enthalpy of sodium chloride crystal. (5).
36. a) i) Derive Vant Hoff equation (5)

    (OR)

    b) i) Define Osmatic pressure (2)
    ii) Write hybridisation of the following compounds (3).
    a) BF_3 b) PCl_5 c) SF_6
37. a) Describe the classification of organic compounds based on their structure (5)

    (OR)

    b) i) Write short notes on Resonance or Mesomeric effect (3).

    ii) $RCN \xrightarrow{LiAlH_4} ?$ (2)
38. a) An organic compound (A) of molecular formula C_2H_6O, on heating with Con. H_2SO_4 gives compound (B). (B) on heating with cold dilute alkaline $KMnO_4$ gives compound (C). Identify(A), (B) and (C). (5)

    (OR)

    b) Convert the followings (5)
    a) Acetylene → Benzene
    b) Phenol → Benzene
    c) Benzene → Toluene
    d) Benzene → Nitro Benzene