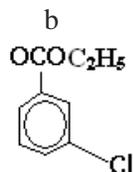
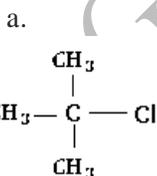




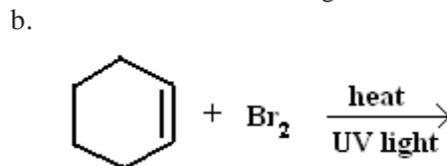
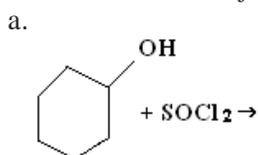
THE GURUKUL INSTITUTE

PLOT 5C, 2ND FLOOR, GANAPATI COMPLEX, SEC-13, OPP. JAIPURIA SCHOOL, VASUNDHARA, GHAZIABAD (U.P)
CLASS XII, CHEMISTRY UNIT TEST -1

- In Zinc sulphide; ZnS which ions:
 - Occupy tetrahedral voids
 - Form the close packed lattice?
- How can iodoform be prepared from ethanol? (Give equation)
- Define 'azeotropic mixture'.
- What is Van't Hoff factor for $\text{Na}_2\text{SO}_4 \cdot 10 \text{H}_2\text{O}$?
- Analysis shows that nickel has formula $\text{Ni}_0.98\text{O}_1.00$. What fraction of the nickel exists as Ni^{2+} and Ni^{3+} ions?
- A solid $\text{A}^+ \text{B}^-$ has NaCl type closed packed structure. If the anion has a radius of 250 pm, what should be the ideal radius for the cation? Can a cation C^+ having the radius of 180 pm be stepped into the tetrahedral void of the crystal $\text{A}^+ \text{B}^-$? Give reason for your answer.
- An element crystallizes in a structure having a fcc unit cell of an edge 200 pm. Calculate its density if 200 g of this element contain 24×10^{23} atoms.
- Explain how much portion of an atom located at a) corner b) body centre c) face- centre of a cubic unit cell in part of its neighboring unit – cell.
- A compound formed by elements P and Q crystallizes in cubic structure where P atoms are at the corners of a cube and Q atoms are at the face centre. What is the formula of the compound?
- What happens when
 - n- butyl chloride is treated with alcoholic KOH,
 - bromobenzene is treated with Mg in the presence of dry ether,
- The Henry' law constant for oxygen dissolved in water is 4.34×10^4 atm at 25°C . if the partial pressure of oxygen in air is 0.2 atm under ordinary atmosphere conditions, calculate the concentration (in moles per litre) of dissolved oxygen in water in equilibrium with air at 25°C .
- a) Which of the following is a dimensionless quantity: Molarity, Molality or Mole fraction?
b) A solution is 25% water, 25% ethanol and 50% acetic acid and by mass, calculate the mole fraction of each component. [Ans.: $X_{\text{H}_2\text{O}} = 0.503$; $X_{\text{alcohol}} = 0.196$ $X_{\text{acetic acid}} = 0.301$.
- Out of the two solutions having density = 1 g mL^{-1} .
 - Molar cane sugar solution
 - Which one has higher relative lowering of vapor pressure.
 - Higher osmotic pressure?
 - Write the IUPAC names of the following:
 - Molar urea solution in acetone.



- A solution containing 30 g of a non volatile solute exactly in 90g of 2.8K at 298K . Further 18g of water is then added to the solution, the new vapor pressure becomes 2.9kpa at 298K . Calculate a) Molar mass of the solute, b) Vapor pressure of water at 298K .
- Draw the structure of major monohalo products in each of the following reactions:



- An alkyl halide having molecular formula $\text{C}_4\text{H}_9\text{Cl}$ is optically active. What is its structure?

17. Write the equations for the preparation of 1-iodobutane from:
- 1-butanol
 - 1-chlorobutane
18. Write the structure of main products:
- Chlorination of benzene in presence of U.V light.
 - Propene is treated with HBr in presence of benzoyl peroxide.
19. The density of $2M^+Na_2S_2O_3$ solution is $1.25g\ ml^{-1}$. Calculate (i) the percentage by weight of sodium thiosulphate (ii) the mole fraction of sodium thiosulphate and (iii) molality of Na^+ ions and $S_2O_3^{2-}$ ions. [Molar mass of $Na_2S_2O_3 = 158\ g\ mol^{-1}$]
20. Explain why
- The dipole moment of chlorobenzene is lower than that of cyclohexyl chloride,
 - Alkyl halides, though polar, are immiscible with water.
 - Grignard reagent should be prepared under anhydrous conditions
21. a) Explain the terms (i) Mass- percentage (ii) Volume percentage of a solution.
b) What volume of 95% sulphuric acid (density = $1.85\ g\ ml^{-1}$) and what mass of water, must be taken to prepare 100 ml of 15% solution of H_2SO_4 (density = $1.10\ g\ ml^{-1}$).
22. Identify and indicate the presence of centre of chirality, if any, in the following molecules. How many stereo isomers are possible for those containing chiral centre?
- 1, 2-dichloropropane
 - 3-bromo-pent-1-ene