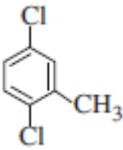


Sure-Shot Questions- Chemistry Class XII

1MARK

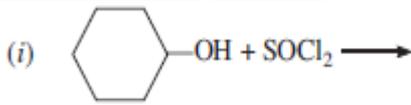
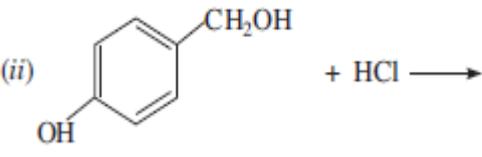
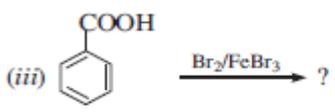
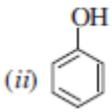
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| 1 | Of physisorption or chemisorption, which has a higher enthalpy of adsorption? |
| 2 | Rearrange the following compounds in the increasing order of their boiling points: CH ₃ —CHO, CH ₃ —CH ₂ —OH, CH ₃ —CH ₂ —CH ₃ |
| 3 | What are the products of hydrolysis of sucrose? |
| 4 | Write the name of linkage joining two amino acids. |
| 5 | What is especially observed when a beam of light is passed through a colloidal solution? |
| 6 | What is the basicity of H ₃ PO ₃ and why? |
| 7 | Write the IUPAC name of the following compound:  |
| 8 | Write the structure of prop-2-en-1-amine. |
| 9 | How may the conductivity of an intrinsic semiconductor be increased? |
| 10 | Define 'peptization' |
| 11 | How is copper extracted from a low grade ore of it? |
| 12 | Which is a stronger reducing agent, SbH ₃ or BiH ₃ , and why |
| 13 | A reaction is of second order with respect to a reactant. How is its rate affected if the concentration of the reactant is (i) doubled (ii) reduced to half? |
| 14 | What is meant by 'lanthanoid contraction'? |
| 15 | Rearrange the following in an increasing order of their basic strengths: C ₆ H ₅ NH ₂ , C ₆ H ₅ N(CH ₃) ₂ , (C ₆ H ₅) ₂ NH and CH ₃ NH ₂ |

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| 16 | Account for the following: (i) Schottky defects lower the density of related solids. (ii) Conductivity of silicon increases on doping it with phosphorus. |
| 17 | Draw the structures of the following molecules: (i) XeOF ₄ (ii) H ₃ PO ₃ |
| 18 | Explain the mechanism of the dehydration of alcohol into alkene. |
| 19 | Outline the principles of refining of metals by the following methods: (i) Zone refining (ii) Vapour phase refining |
| 20 | Define the following terms with an example in each case: (i) Macromolecular sol (ii) Peptisation (iii) Emulsion |
| 21 | Differentiate between disinfectants and antiseptics |
| 22 | The molar conductivity of a 1.5 M solution of an electrolyte is found to be 138.9 S cm ² mol ⁻¹ . Calculate the conductivity of this solution. |
| 23 | Which methods are usually employed for purifying the following metals (i) Nickel (ii) Germanium Mention the principle behind each of them. |
| 24 | Explain the mechanism of acid catalysed hydration of an alkene to form corresponding alcohol. |
| 25 | Describe the following, giving the relevant chemical equation in each case: (i) Carbylamine reaction (ii) Hoffmann's bromamide reaction |
| 26 | Give reasons for the following (ANY TWO) |

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| | <p>(i) Where R is an alkyl group, $R_3P=O$ exists but $R_3N=O$ does not.</p> <p>(ii) $PbCl_4$ is more covalent than $PbCl_2$</p> <p>(iii) At room temperature, N_2 is much less reactive.</p> |
| 27 | <p>What is meant by crystal field splitting energy? On the basis of crystal field theory, write the electronic configuration of d^4 in terms of t_{2g} and e_g in an octahedral field when</p> <p>(i) $\Delta_0 > P$ (ii) $\Delta_0 < P$</p> |
| 28 | <p>The standard electrode potential (E°) for Daniell cell is + 1.1 V. Calculate the ΔG° for the reaction</p> $Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$ <p>(1 F = 96500 C mol⁻¹).</p> |
| 29 | <p>What do you understand by the rate law and rate constant of a reaction? Identify the order of a reaction if the units of its rate constant are:</p> <p>(i) L⁻¹ mol s⁻¹ (ii) L mol⁻¹ s⁻¹.</p> |
| 30 | <p>The thermal decomposition of HCOOH is a first order reaction with a rate constant of $2.4 \times 10^{-3} \text{ s}^{-1}$ at a certain temperature. Calculate how long will it take for three-fourths of initial quantity of HCOOH to decompose. ($\log 0.25 = -0.6021$)</p> |
| 3MARK | |
| 31 | <p>Copper crystallises with face centred cubic unit cell. If the radius of copper atom is 127.8 pm, calculate the density of copper metal.</p> <p>(Atomic mass of Cu = 63.55 u and Avogadro's number $N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$)</p> |
| 32 | <p>How would you account for the following:</p> <p>(i) Cr^{2+} is reducing in nature while with the same d-orbital configuration (d^4) Mn^{3+} is an oxidising agent.</p> <p>(ii) In a transition series of metals, the metal which exhibits the greatest number of oxidation occurs in the middle of the series.</p> |
| 33 | <p>State reasons for the following:</p> <p>(i) $Cu(I)$ ion is not stable in an aqueous solution.</p> <p>(ii) Transition metals and their compounds are generally found to be good catalysts.</p> |
| 34 | <p>What are the following substances? Give one example of each.</p> <p>(i) Food preservatives</p> <p>(ii) Synthetic detergents</p> <p>(iii) Antacids</p> |
| 35 | <p>Write the structures and names of all the stereoisomers of the following compounds:</p> <p>(i) $[Co(en)_3]Cl_3$</p> <p>(ii) $[Pt(NH_3)_2Cl_2]$</p> <p>(iii) $[Fe(NH_3)_4Cl_2]Cl$</p> |
| 36 | <p>(i) State Henry's law about partial pressure of a gas in a mixture</p> <p>(ii) A 0.561 m solution of an unknown electrolyte depresses the freezing point of water by 2.93°C. What is Van't Hoff factor for this electrolyte? The freezing point depression constant (K_f) for water is 1.86°C kg mol⁻¹.</p> |
| 37 | <p>(a) What does the designation '6,6' in nylon 6, 6 polymer mean?</p> <p>(b) Which polymer is obtained when free radical polymerisation of chloroprene occurs? Write the structure of the polymer thus obtained.</p> |
| 38 | <p>An organic compound contains 69.77% carbon, 11.63% hydrogen and rest oxygen. The molecular mass of the compound is 86. It does not reduce Tollen's reagent but forms an addition compound with sodium hydrogensulphite and gives positive iodoform test. On vigorous addition, it gives ethanoic and propanoic acids. Derive the structure of the compound 'A'.</p> |

| 39 | <p>For the reaction $2\text{NO}(g) + \text{Cl}_2(g) \rightarrow 2\text{NOCl}(g)$, the following data were collected. All the measurements were taken at 263 K:</p> <table border="1" data-bbox="247 309 1348 539"> <thead> <tr> <th>Experiment No.</th> <th>Initial [NO] (M)</th> <th>Initial [Cl₂] (M)</th> <th>Initial rate of disappearance of Cl₂ (M/min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.15</td> <td>0.15</td> <td>0.60</td> </tr> <tr> <td>2</td> <td>0.15</td> <td>0.30</td> <td>1.20</td> </tr> <tr> <td>3</td> <td>0.30</td> <td>0.15</td> <td>2.40</td> </tr> <tr> <td>4</td> <td>0.25</td> <td>0.25</td> <td>?</td> </tr> </tbody> </table> <p>(a) Write the expression for rate law. (b) Calculate the value of rate constant and specify its units. (c) What is the initial rate of disappearance of Cl₂ in experiment 4?</p> | Experiment No. | Initial [NO] (M) | Initial [Cl ₂] (M) | Initial rate of disappearance of Cl ₂ (M/min) | 1 | 0.15 | 0.15 | 0.60 | 2 | 0.15 | 0.30 | 1.20 | 3 | 0.30 | 0.15 | 2.40 | 4 | 0.25 | 0.25 | ? |
|------------------------------|--|--------------------------------|--|--------------------------------|--|---|------|------|------|---|------|------|------|---|------|------|------|---|------|------|---|
| Experiment No. | Initial [NO] (M) | Initial [Cl ₂] (M) | Initial rate of disappearance of Cl ₂ (M/min) | | | | | | | | | | | | | | | | | | |
| 1 | 0.15 | 0.15 | 0.60 | | | | | | | | | | | | | | | | | | |
| 2 | 0.15 | 0.30 | 1.20 | | | | | | | | | | | | | | | | | | |
| 3 | 0.30 | 0.15 | 2.40 | | | | | | | | | | | | | | | | | | |
| 4 | 0.25 | 0.25 | ? | | | | | | | | | | | | | | | | | | |
| VALUE BASED QUESTIONS | | | | | | | | | | | | | | | | | | | | | |
| 40 | <p>Shanti, a domestic helper of Mrs. Anuradha, fainted while mopping the floor. Mrs. Anuradha immediately took her to the nearby hospital where she was diagnosed to be severely 'anaemic'. The doctor prescribed an iron rich diet and multivitamins supplement to her. Mrs. Anuradha supported her financially to get the medicines. After a month, Shanti was diagnosed to be normal.</p> <p>After reading the above passage, answer the following questions: (i) What values are displayed by Mrs. Anuradha? (ii) Name the vitamin whose deficiency causes 'pernicious anaemia'. (iii) Give an example of a water soluble vitamin.</p> | | | | | | | | | | | | | | | | | | | | |
| 41 | <p>. An innovative washer woman while washing a copper miner's clothes found that sand and similar dirt particle fell to the bottom, while the ore particles stuck to the soapsuds and came to the top. The washer woman discussed this matter with a client who was a chemist.</p> <p>a. What is the reason for this observation? b. What value do you get from this episode?</p> | | | | | | | | | | | | | | | | | | | | |
| 42 | <p>Ashraf is 50 years old and has diabetes. He uses saccharine as sweetening agent in tea and coffee and sugar free in sweets. Lakshmi too is diabetic. She controls her sugar level in diet by using less sugar and by exercising.</p> <p>a. Who is able to handle diabetes more efficiently and why? b. What value do you derive from this? c. What are the harmful effects of artificial sweeteners?</p> | | | | | | | | | | | | | | | | | | | | |
| 43 | <p>People are advised to limit the use of fossil fuels resulting in Green House Effect leading to a rise in the temperature of earth. Hydrogen provides an ideal alternative and its combustion in fuel cells.</p> <p>(a). Write electrode reaction in H₂-O₂ fuel cell. (b) How is green house effect reduced by the use of fuel cells? (c) Write the values associated with preference of using fuel cells to fossil fuel.</p> | | | | | | | | | | | | | | | | | | | | |
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| 44 | <p>(a) Explain the following observations: (i) The boiling point of ethanol is higher than that of methoxymethane. (ii) Phenol is more acidic than ethanol. (iii) o-and p-nitrophenols are more acidic than phenol.</p> | | | | | | | | | | | | | | | | | | | | |

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| | <p>(b) Complete the following reaction:</p> <p>(i)  $\text{C}_6\text{H}_{11}\text{OH} + \text{SOCl}_2 \longrightarrow$</p> <p>(ii)  $\text{C}_6\text{H}_4(\text{OH})(\text{CH}_2\text{OH}) + \text{HCl} \longrightarrow$</p> <hr/> |
| 45 | <p>(a) How will you convert the following:</p> <p>(i) Propanone to Propan-2-ol (ii) Ethanal to 2-hydroxy propanoic acid</p> <p>(iii) Toluene to benzoic acid</p> <p>(b) Give simple chemical test to distinguish between:</p> <p>(i) Pentan-2-one and Pentan-3-one (ii) Ethanal and Propanal</p> |
| 46 | <p>(a) Write the products of the following reactions:</p> <p>(i) $\text{CH}_3\text{C}(=\text{O})\text{CH}_3 \xrightarrow[\text{conc. HCl}]{\text{Zn-Hg}} ?$</p> <p>(ii) $\text{CH}_3\text{C}(=\text{O})\text{Cl} + \text{H}_2 \xrightarrow{\text{Pd-BaSO}_4} ?$</p> <p>(iii)  $\text{C}_6\text{H}_5\text{COOH} \xrightarrow{\text{Br}_2/\text{FeBr}_3} ?$</p> <hr/> <p>(b) Which acid of each pair shown here would you expect to be stronger?</p> <p>(i) $\text{F-CH}_2\text{-COOH}$ or $\text{Cl-CH}_2\text{-COOH}$</p> <p>(ii)  or CH_3COOH</p> |
| 47 | <p>(a) State Raoult's law for a solution containing volatile components. How does Raoult's law become a special case of Henry's law?</p> <p>(b) 1.00 g of a non-electrolyte solute dissolved in 50 g of benzene lowered the freezing point of benzene by 0.40 K. Find the molar mass of the solute. (K_f for benzene = 5.12 kg mol⁻¹)</p> |
| 48 | <p>(a) How many moles of mercury will be produced by electrolysing 1.0 M. $\text{Hg}(\text{NO}_3)_2$ solution with a current of 2.00 A for 3 hours?</p> <p>(b) A voltaic cell is set up at 25° C with the following half-cells Al^{3+} (0.001 M) and Ni^{2+} (0.50 M). Write an equation for the reaction that occurs when the cell generates an electric current and determine the cell potential.</p> <p>(Given: $E_{\text{Ni}^{2+}/\text{Ni}}^{\circ} = -0.25 \text{ V}$, $E_{\text{Al}^{3+}/\text{Al}}^{\circ} = -1.66 \text{ V}$)</p> |
| 49 | <p>(a) Complete the following reactions in an aqueous medium:</p> |

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| | <p>(i) $\text{MnO}_4^- + \text{C}_2\text{O}_4^{2-} + \text{H}^+ \longrightarrow$</p> <p>(ii) $\text{Cr}_2\text{O}_7^{2-} + \text{H}_2\text{S} + \text{H}^+ \longrightarrow$</p> <p>(b) How would you account for the following:</p> <p>(i) Metal-metal bonding is more extensive in the 4d and 5d series of transition elements than the 3d series.</p> <p>(ii) Mn (III) undergoes disproportionation reaction easily.</p> <p>(iii) Co (II) is easily oxidised in the presence of strong ligands.</p> |
| 50 | <p>(a) Draw the structures of the following:</p> <p>(i) N_2O_5 (ii) XeO_3</p> <p>(b) Explain the following observations:</p> <p>(i) The electron gain enthalpy of sulphur atom has a greater negative value than that of oxygen atom.</p> <p>(ii) Nitrogen does not form pentahalides.</p> <p>(iii) In aqueous solutions HI is a stronger acid than HCl.</p> |