

<p>XII-STD- CHEMISTRY MINIMUM MATERAIL (Based on Public key answer)</p> <p>UNIT-1- METALLURGY Define mineral and ore ,example Mineral-metal free or combined state Ex-China clay Ore-High percentage of metal-Bauxite Why Bauxite ore but china clay is mineral-China clay Bauxite-High percentage of metal Profitable extraction China clay-Low Percentage of metal Concentration of ore& Gangue Ore+Non metallic +rocky material +Siliceous matter- Gangue Remove this impurities What is Gravity separation or (Hydraulic wash) Ore-high specific gravity Impurities-low specific gravity Impurities washed away by water Example gold Write about Froth flotation- Sulphide ore, PbS,Zns Pine oil Eucalyptus oil-frothing agent .SodiumEthyl xanthate- Write Alumino thermic process $\text{Cr}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Cr}$ What is Auto reduction $\text{HgS} + \text{O}_2 \rightarrow \text{Hg} + \text{SO}_2$ (nv)</p>	<p>Ore wetted by oil Impurities wetted by water Zns, PbS What is role of Depressing agent Depressing agent NaCN Forming Zinc complex $\text{Na}_2(\text{Zn}(\text{CN})_4)$ Cementation-Zero oxidation state Write Magnetic separation Used for ferro magnetic substance Magnetic- Tinstone Chromite Non-magnetic- Wolframite Ore-near the magnetic region Impurities-Away from the magnetic region What is Roasting , Calcination Presence of oxygen $2\text{PbS} + 3\text{O}_2 \rightarrow 2\text{PbO} + 2\text{SO}_2$ Absence of oxygen $\text{PbCO}_3 \rightarrow \text{PbO} + \text{CO}_2$ Function of lime stone in smelting $\text{CaO} + \text{SiO}_2 \rightarrow \text{CaSiO}_3$ Flux +Gangue \rightarrow Slag Limitation of Ellingham diagram Does not tell about rate of reaction Does not about Possibilities of other reaction ΔG assumption reactants and</p>	<p>Products are in equilibrium-not always true What is Ellingham diagram Temperature Vs Free energy Explain Electrolytic refining Cathode; Pure Ag Anode; impure Ag Electrolyte; aq.Silver nitrate Anode;$\text{Ag} \rightarrow \text{Ag}^+ + 1\text{e}^-$ Cathode-$\text{Ag}^+ + 1\text{e}^- \rightarrow \text{Ag}$ Impurities are settled at bottom of anode –Anode mud. Write about Zone Refining Fractional Crystallization Impurities are in molten region Inert atmosphere-prevent oxidation . Ex-Ge,Ga,Si Vapour phase method requirement Metal+ suitable reagent-\rightarrow Volatile compound decompose \rightarrow pure metal Mond process $\text{Ni} + 4\text{CO} \rightarrow \text{Ni}(\text{CO})_4$ (350K) $\text{Ni}(\text{CO})_4 \rightarrow \text{Ni} + 4\text{CO}$ (460K) Van Arkel method $\text{Ti}(\text{Zr}) + 2\text{I}_2 \rightarrow \text{Ti}(\text{Zr})\text{I}_4$ (550K) $\text{Ti}(\text{Zr})\text{I}_4 \rightarrow \text{Ti}(\text{Zr}) + 2\text{I}_2$ (1800K) What are the uses of Zinc Galvanization Coating of Zn on Iron Prevent the rust and corrosion. Brass-water valves,Die-casting ZnS-Luminous paint.</p>	<p>UNIT-2-P-BLOCK -ELEMENTS Anomalous properties of P- bloc Small size, High I.energy electronegativity, absence of d- orbital Define Inert pair effect Outer ns electron (reluctance) Does not take part in bonding. How will Identify borate radical $\text{H}_3\text{BO}_3 + 3 \text{C}_2\text{H}_5\text{OH} \rightarrow \text{B}(\text{OC}_2\text{H}_5)_3 + 3\text{H}_2\text{O}$ (H_2SO_4) Green Flame Structure of Diborane (Draw the Structure Here Refer the book) SP^3-hybridisation 4 terminal B-H bond covalent-(2c-2e). 2 three centre B-H-B bond(3C-2e)four SP^3 hybrid orbital in B-atom Preparation of Alum $\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 4\text{Al}(\text{OH})_3 + 6\text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + 3\text{Al}_2(\text{SO}_4)_3 + 12\text{H}_2\text{O}$ How will prepare Burnt alum $\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O} \rightarrow \text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 + 24\text{H}_2\text{O}$ Write about Hydroboration $\text{B}_2\text{H}_6 + 6\text{CH}=\text{CHR} \rightarrow 2\text{B}(\text{RCH}-\text{CH}_2\text{R})_3$ CO Reducing agent $3\text{CO} + \text{Fe}_2\text{O}_3 \rightarrow 2\text{Fe} + 3\text{CO}_2$ Write McAfee process $\text{Al}_2\text{O}_3 + 3\text{C} + 3\text{Cl}_2 \rightarrow 2\text{AlCl}_3 + 3\text{CO}_2$ $2\text{Al} + 3\text{Cl}_2 \rightarrow 2\text{AlCl}_3$ (1000°C) Prepared by N.Vellaichamy M.sc.B.ed</p>
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<p>Write the Uses of Alum</p> <p>Purification of water</p> <p>Used in textiles dyeing, paper industries, Styptic agent (arrest Bleeding) (nv)</p> <p>What is Catenation-Conditions</p> <p>Valency equal to 2 or 2 <</p> <p>Ability bond with itself</p> <p>Self bond must be strong compared with other</p> <p>Kinetic inertness of molecule</p> <table><tr><th>Graphite</th><th>Diamond</th></tr><tr><td>Soft</td><td>Hard</td></tr><tr><td>Conduct electricity</td><td>Not conduct Electricity</td></tr><tr><td>SP³</td><td>SP²</td></tr><tr><td>hybridisation</td><td>hybridisation</td></tr><tr><td>C-C length 1.41 Å⁰</td><td>C-C length 1.54 Å⁰</td></tr><tr><td>Use</td><td>Use</td></tr><tr><td>Hard tools</td><td>Graphite oil</td></tr><tr><td>Rock trilling</td><td></td></tr></table> <p>Fisher Tropsch synthesis . >50 atm</p> <p>nCO+(2n+1)H₂->C_nH_{2n+ 2}+ nH₂O</p> <p>nCO+ 2nH₂ ->C_nH_{2n} +nH₂O(500-700K)</p> <p>Write Uses of Borax</p> <p>Identification of coloured metal ions Used for flux, preservatives</p> <p>Manufacture of optical glass, enamels</p> <p>Uses Of Sulphuric acid</p> <p>Drying agent,Pigment,Explosive, Fertilizer, other chemical HCl,HNO₃</p>	Graphite	Diamond	Soft	Hard	Conduct electricity	Not conduct Electricity	SP ³	SP ²	hybridisation	hybridisation	C-C length 1.41 Å ⁰	C-C length 1.54 Å ⁰	Use	Use	Hard tools	Graphite oil	Rock trilling		<p>Write the Uses of silicone</p> <p>Insulating material in electrical motor</p> <p>Making water proofing clothes</p> <p>Mixed with paints(high thermal, sun light resistance), Low temperature lubricants, High temperature oil bath</p> <p>UNIT-3-P-BLOCK ELEMENTS (Study book question)</p> <p>What is Holmes signal.?</p> <p>Calciumcarbide+Calcium phosphide->Phosphine ↑ + Acetylene (thrown into sea)</p> <p>Phospine- catches fire and ignite acetylene-Burning gases signal to ships</p> <p>Estimation of Ozone</p> <p>O₃ +2KI+H₂O->2KOH+O₂+I₂</p> <p>Test for Sulphate</p> <p>BaCl₂+H₂SO₄->BaSO₄ +2HCl</p> <p>Deacon's Process</p> <p>4HCl+O₂ Cu₂Cl₂->2H₂O+2Cl₂</p> <p>Preparation Bleaching Powder</p> <p>Ca(OH)₂+Cl₂→CaOCl₂+H₂O</p> <p>What is Royl water(aquaregia)</p> <p>3Part Hcl +1Part Con.HNO₃</p> <p>Prepare Bleaching powder</p> <p>Ca(OH)₂+CL₂->CaOCL₂+H₂O</p> <p>Explain about Inter Halogen Compounds</p> <p>Definition</p> <p>Each halogen combine with other halogen Ex; ICL</p>	<p>Properties</p> <p>Central atom will large</p> <p>Btw only two halogen (not more than two)</p> <p>F-small size(Central atom)</p> <p>F-small size High electro negativity</p> <p>High co-ordination number</p> <p>Auto ionisation.</p> <p>Strong oxidizing agent</p> <p>Define Bends</p> <p>Air+Oxygen mixture making pain</p> <p>In divers body->Called bends</p> <p>What Happens PCl₅Heated</p> <p>PCl₅->PCl₃+Cl₂</p> <p>What are the Uses of He,Ar gases</p> <p>Used in cryogenic (nv)</p> <p>Used in air ballons</p> <p>Electric arc welldind (inert atmosphere)</p> <p>He-O₂-used for dives(sea)</p> <p>Prevent the oxidation OF filament</p> <p>Life time of filament will be high</p> <p>Fluorine oxidation state -1 why?</p> <p>High electronegativity</p> <p>Absence of d-orbital</p> <p>Why fluorine more reactive than others</p> <p>Minimum F-F dissociation energy</p> <p><u>Sulphuric acid is dehydrating agent</u></p> <p>HCOOH+H₂SO₄->CO+H₂SO₄.H₂O</p> <p>(COOH)₂+H₂SO₄->CO+ CO₂</p> <p>H₂SO₄.H₂O (nv)</p>	<p>UNIT-4 TRANSITION & INNER TRANSITION ELEMENTS.</p> <p>Catalytic properties of d-block</p> <p>Energetically available d-orbital</p> <p>Accept e⁻ from reactingmolecules</p> <p>Alkenes--- Alkanes (H₂/Ni)</p> <p>Alloys formation of d-Block (1 st)</p> <p>Interstitial compound d-block</p> <table><tr><td>Similar atomic size</td><td>Small atom (C,N,B)</td></tr><tr><td>One atom can replaced by other atom in crystal lattice</td><td>One atom trapped in interstitial hole in a lattice</td></tr><tr><td>Ex Au-Cu</td><td>Ex TiC</td></tr></table> <p>Formation of complex d-block</p> <p>Small size, high charge,</p> <p>Vaccant low energy orbitals</p> <p>Accept the e⁻from ligand</p> <p>Example -[Fe(CO)₆]⁻⁴.</p> <p>Position of lanthanoids P.table</p> <p>3rd group 6 th period</p> <p>Electron filled in 4f subshell</p> <p>[Xe]4f¹⁻¹⁴5d⁰⁻¹ 6S²</p> <p>Oxidatation state is+3</p> <p>Similar Physical and chemical properties.</p> <p>Write Lanthanoid contraction</p> <p>Atomic or ionic radii decreases</p> <p>Atomic number is increases</p> <p>Cause-Imperfect shielding effect</p> <p>Consequence-Basicity decreases</p> <p>Onic character increases but covalent character increases</p>	Similar atomic size	Small atom (C,N,B)	One atom can replaced by other atom in crystal lattice	One atom trapped in interstitial hole in a lattice	Ex Au-Cu	Ex TiC
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Similarities Decreases in atomic or Ionic radii 10 pm or 20 pm Zr-145 pm (4d series) Hf-144Pm(5dseries) both have similar chemical Properties		VBT-(Valence bond Theory) Ligand-metal (covalent nature) Ligand- contain lone pair of e ⁻ Metal-Vaccant orbital Ligand orbital +metal orbital- Hybridisation Number of ligands attached to central atom-Coordination number) nd orbital involved in Hybridisation are called outer orbital complex nd orbital involved in Hybridisation are called outer orbital complex Strong field ligand pairup e ⁻ CO Limitation of VBT-Theory Doesnot explain colour of the complex Explain only magnetic moment Not other magnetic property Does not explain why some complex are inner and some are outer orbital complex – same metal <u>Crystal field stabilization energy</u> CFSE $\Delta E_0 = \{E_{L.F}\} - \{E_{iso}\}$ Solvated Isomerism(Hydrate) Exchange of Solvent molecule in Crystal lattice [Cr(H ₂ O) ₆ Cl ₃] What is Linkage isomerism Ambidentate ligand to central metal atom-2 donar atom nv)	Double salt Salt & constituted ions properties are same Lose its identity in liquid state Equimolar Proportion	Cordinatination Complex constituted ions properties are not same donot Lose its identity in liquid state may or may not Equimolar Proportion	Define Point defect (must Diagram for all defects) Missing of atom, displaced atom, Extra atom, deficiency of atom will make imperfection in crystal lattice Ex NaCl What is Schottky defect Missing of equal number of cation and anion from the crystal lattice, affect density -Ex NaCl What is Frenkel defect Dislocation of ions from the Crystal lattice,not affect density Missing ions occupies Interstitial position. Ex -Ag Br																						
<table><tr><th>Lanthanoids</th><th>Actinoids</th></tr><tr><td>Electron enter in 4f orbital</td><td>Electron enter in 5f orbital</td></tr><tr><td>4f binding energy high</td><td>4f binding energy low</td></tr><tr><td>Complex forming less</td><td>Complex forming higher</td></tr><tr><td>Colourless</td><td>Colour(U⁺³red)</td></tr><tr><td>No oxocation</td><td>Form xocation</td></tr><tr><td>Common oxi.state-+3 (+2,+4)</td><td>Common oxi.state-+3 (+2,+4)</td></tr></table>	Lanthanoids	Actinoids	Electron enter in 4f orbital	Electron enter in 5f orbital	4f binding energy high	4f binding energy low	Complex forming less	Complex forming higher	Colourless	Colour(U ⁺³ red)	No oxocation	Form xocation	Common oxi.state-+3 (+2,+4)	Common oxi.state-+3 (+2,+4)					<table><tr><th>Metal excess</th><th>M.Deficiency</th></tr><tr><td>More number of metal ion</td><td>Less number of metal ion</td></tr><tr><td>Low number of anion</td><td>High number of anion</td></tr><tr><td>Ex NaCl</td><td>Ex FeO</td></tr></table>	Metal excess	M.Deficiency	More number of metal ion	Less number of metal ion	Low number of anion	High number of anion	Ex NaCl	Ex FeO
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UNIT-5- CO-ORDINATION CHEMISTRY Explain About Werner's theory 1 ⁰ Valency-Oxidation state 2 ⁰ Valency –Co-ordination number 1 ⁰ Valency-positive or Zero 2 ⁰ Valency –positive ,negative neutral. Inner sphere- Co-Ordination Sphere Outer sphere- Ionisation Sphere 1 ⁰ Valency- Non-directional 2 ⁰ Valency –directional Limitation of werners theory Does not explain Colour,Magnetic properties																											
UNIT-6 –SOLID STATE Define Unit cell Basic repeating structural unit of crystalline solid What Co-ordination number BCC ? The number of nearest neighbours that surrounding a particle BCC-8 Primitive & nonPrimitive unit cell -Unit cell contain one type of lattice Point .Unit cell contain additional lattice point. Number of atom in SC,FCC,BCC,																											
		<table><tr><th>SC</th><th>BCC</th><th>FC</th></tr><tr><td>$N_c/8$ $=8/8=1$</td><td>$N_c/8+N_b/8$ $8/8+1/1=2$</td><td>$N_c/8+N_f/2$ $8/8+6/2=3$</td></tr></table>	SC	BCC	FC	$N_c/8$ $=8/8=1$	$N_c/8+N_b/8$ $8/8+1/1=2$	$N_c/8+N_f/2$ $8/8+6/2=3$																			
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Write about Bragg's equation $n\lambda=2d\sin\theta$ λ -Wave length d-Distance θ -angle diffraction , n-order Why Ionic crystal hard & brittle Strong E.static Force of attraction Ionic bond Non directional																											
Define F-Center The anionic vacancy are filled by unpaired by Electrons Write about Impurity defect Adding impurity ions Add CdCl ₂ to silver chloride(AgCl) Cd ⁺² Occupies the Ag ⁺ ions SC - 52.31, $r=a/2$, $\pi a^3/6 \times 100/a^3$ BCC -68, $r=\sqrt{3}a/4$, $\sqrt{3} \pi a^3/8 \times 100/a^3$ FCC -74 , $r=\sqrt{2}a/4$, $\sqrt{2} \pi a^3/6 \times 100/a^3$																											

UNIT-7-CHEMICAL KINETICKS		Average & Instantaneous rate A.rate= Final con.of Reactant- Initial Con. of Reactant/change in time (nv) Define half life period Time required for the reactant concentration reach to one half its initial value $t_{1/2}=0.693/k$ Define Pseudo First order Second order reaction altered to first order by taking one of the reactant large excess Example ester hydrolysis Write Arrhenius equation $K=A_e \cdot E_a/RT$ A-Frequency factor R-gas constant Ea-Activation energy T-Absolute temperature Derive Integrated first order $-d[A]/[A]=Kdt$, $\ln [A_0]/[A]=Kt$ $K=2.303/t \log [A_0]/[A]$ Derive Integrated Zero order $-d[A]/dt=K(1)$, $K=[A_0]-[A]/t$ Example for first order Isomerisation of cyclopropane to propene, Decomposition of H_2O_2 , Decomposition of $SO_2 CL_2$ Example for Zero order $H_2+I_2 \rightarrow 2HI$ (light) Decomposition of N_2O Iodination of Acetone(A.med)	N,vellaichamy M.sc.B.Ed UNIT-8- IONIC EQUILIBRIUM <table><tr><td>Arrhenius Substance which give H^+ -acid -HCl Substance which give OH^- Base- NaOH</td><td>L.Bronsted Substance Which give Proton -acid HCL Substance which accept proton base- NH_3</td></tr></table> Write about Lewis concept Substance which Accept e^- pair - acid-BF3. The Substance which Donate e^- pair -Base- Ex- NH_3 Define P_H and P_{OH} $P_H= -\log_{10}[H_3O^+]$ $P_{OH}= -\log_{10}[OH^-]$ What is Ostwald dilution law $CH_3COOH \leftrightarrow CH_3COO^- + H^+$ (acid) $\alpha= K_a/c$, $[H^+]=K_a C$ $[OH^-]= K_b C$ $\alpha=$ number of moles dissociated total no.of moles Define Common Ion Effect Dissociation of weak acid- suppressed by salt of weak acid $CH_3COOH \leftrightarrow CH_3COO^- + H^+$ (acid) $CH_3COONa \rightarrow CH_3COO^- + Na^+$ (Salt) CH_3COONa -Common ion LeChateliers principle Buffer solution(action) The resist the drastic change in its P_H Value-by Addition of acid or Base	Arrhenius Substance which give H^+ -acid -HCl Substance which give OH^- Base- NaOH	L.Bronsted Substance Which give Proton -acid HCL Substance which accept proton base- NH_3	$CH_3COOH+CH_3COONa$ (A.Buffer) NH_4Cl+NH_4OH (Basic Buffer) What is Buffer Index $\beta =dB/d(PH)$ Henderson –haselbalch equation $[H_3O^+]=K_a[acid]/[base]$ $[H_3O^+]=K_a[acid]/[salt]$ $P_H=PK_a+\log [salt]/[Acid]$ $P_{OH}=PK_b+\log [salt]/[base]$ Define Solubility product $K_{sp}=[X^{n+}]^m [Y^{m-}]^n$ Define Salt Hydrolysis Acid+Base- \rightarrow salt +water Water+anion or cation (both) react with water Unit -9-Electro chemistry Kohlraush's law At infinite dilution – limiting molar conductivity of an electrolyte is equal to some of the limiting molar conductivity of its constituents ions $(\Lambda^0_m)_{Ax By}=X((\Lambda^0_m)_A)^+ + Y((\Lambda^0_m)_B)^-$ Derive Nernst equation $x A + y B \leftrightarrow I C + m D$ $Q=[C]^I [D]^m / [A]^x [B]^y$ $\Delta G=\Delta G^0+RT \ln Q$ $E_{cell}= E^0_{cell}-2.303RT/nF \log$ $[C]^I [D]^m / [A]^x [B]^y$ Farday's first and second law Ist law $m \propto Q$, $m \propto It$, $m=Zit$ IInd law $m_{Ni} \propto Z_{Ni}$, $m_{Cu} \propto Z_{Cu}$ $m_{Ni} =Z_{Ni}/m_{Cu} =Z_{Cu}$
Arrhenius Substance which give H^+ -acid -HCl Substance which give OH^- Base- NaOH	L.Bronsted Substance Which give Proton -acid HCL Substance which accept proton base- NH_3					

Define Electrochemical Series Decreasing order Std Electro chemical potential value Greater E ⁰ value-Low Corrossion Molar & Equivalent conductance <table><tr><td>$\Lambda_m=k(Sm^{-1})\times10^{-3}$ M Mol⁻¹ m⁻³</td><td>$\Lambda_m=k(Sm^{-1})\times10^{-3}$ N gramEqui⁻¹ m³</td></tr></table> Unit-10-Surface Chemistry <table><tr><td>Che.Adsorb Slow Specific Monolayer Transfer the e⁻ 40-400KJ/mol</td><td>Phy.Adsorb Fast Non specific Multilayer No e⁻ transfer Heat 40KJ/Mol</td></tr></table> Freundlich isotherm x/m=K _p 1/n , log x/m=logK+1/n log P Explain Theories of catalyst <table><tr><td>Intermediate A+B->AB A+C->AC AC+B->AB+C C-catalyst Example I) 2Cu+1/2O₂ ->Cu₂O ii) Cu₂O+H₂ ->H₂O+2Cu</td><td>Adsorbition i)reactant molecule diffuse from bulk to catalyst ii)reactant adsorb on catalyst iii)activated complex iv) desorbition</td></tr></table> Define Tyndall effect Scattering of light by Collidal Particle-T yndall effect (nv)	$\Lambda_m=k(Sm^{-1})\times10^{-3}$ M Mol ⁻¹ m ⁻³	$\Lambda_m=k(Sm^{-1})\times10^{-3}$ N gramEqui ⁻¹ m ³	Che.Adsorb Slow Specific Monolayer Transfer the e ⁻ 40-400KJ/mol	Phy.Adsorb Fast Non specific Multilayer No e ⁻ transfer Heat 40KJ/Mol	Intermediate A+B->AB A+C->AC AC+B->AB+C C-catalyst Example I) 2Cu+1/2O ₂ ->Cu ₂ O ii) Cu ₂ O+H ₂ ->H ₂ O+2Cu	Adsorbition i)reactant molecule diffuse from bulk to catalyst ii)reactant adsorb on catalyst iii)activated complex iv) desorbition	Define Brownian movement Random, Zig -Zag motion of Define Helmholtz double layer Surface of colloidal particle adsorb one layer type of ions Due to Preferential adsorbtion This layer attracts opposite charge ions of medium Define Electrophoresis Migration of sol particle under the influence of electrical current Sol particle move to cathode If Its carries positive charge Sol particle move to anode If Its carries negative charge Define Electro Osmosis Migration of Dispersion Medium under the influence of electrical field Medium move in opposite direction of sol particle Define Flocculation value Minimum concentrarion (milli mole/Lit) required to cause precipitation of sol in 2 hours Flocu.. value α 1/precipitation Define Promoter Substance increase the catalyst speed .example Mo for Fe Define Catalytic Poison Substance increase the catalyst speed. example-CO for pt Define Auto catalyst	<table><tr><td>Homogeneous Catalyst Reactant product & catalyst are same phase</td><td>Heterogeneous Catalyst Reactant product & catalyst are different phase</td></tr></table> Define Gold number The number of milligrams of Hydrophilic colloid That will prevent precipitation of 10 ml gold sol on addition of 10% NaCl solution Gold number α Protective power Define positive and negative catalyst Substance increase the catalyst speed –Positive catalyst Substance Decrease the catalyst speed –Negative catalyst UNIT-11- HYDROXY DERIVATIVES Write about lucas test 1 ⁰ alcohol+ZnCl ₂ ->no reaction 2 ⁰ alcohol+ZnCl ₂ -> turbidity-slow 3 ⁰ alcohol+ZnCl ₂ ->turbidity –fast Note- Study All the Naming Reaction and 2 Mechanism Explain Victor Mayer test 1 ⁰ alcohol+I ₂ /P-Alkyl iodide Alky iodide+AgNO ₂ ->Nitro alkane NitroAlkane+HNO ₂ ->resultant sol Resultant solution+KOH	Homogeneous Catalyst Reactant product & catalyst are same phase	Heterogeneous Catalyst Reactant product & catalyst are different phase	1 ⁰ alcohol+I ₂ /P-Alkyl iodide 1 ⁰ alcohol→red colour 1 ⁰ alcohol→blue colour 1 ⁰ alcohol→no colour Test to differentiate alcohol and phenol Phenol+Benzenediazonium chloride->red orange Ethanol no reaction Phenol+neutral ferric chloride-> purple colour Ethanol no reaction Phenol+NaOH->Sodium phenoxide Ethanol no reaction Write about Dows process Chlorobenzene+NaOH-> Sodium Phenoxide+HCl->Phenol Schotten Baumann reaction Phenol+Acetyl chloride-> Aceto phenone Williamson ether synthesis Phenol+NaOH->Sodium phenoxide+CH ₃ I->Anisole Kolbe's schmit reaction Phenol+NaOH->Sodium phenoxide+CO ₂ -> Sodium salicylate-Hydrolysis->salicylic acid Prepared by N.Vellaichamy M.SC.Bed
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Intermediate A+B->AB A+C->AC AC+B->AB+C C-catalyst Example I) 2Cu+1/2O ₂ ->Cu ₂ O ii) Cu ₂ O+H ₂ ->H ₂ O+2Cu	Adsorbition i)reactant molecule diffuse from bulk to catalyst ii)reactant adsorb on catalyst iii)activated complex iv) desorbition										
Homogeneous Catalyst Reactant product & catalyst are same phase	Heterogeneous Catalyst Reactant product & catalyst are different phase										

<p>UNIT-12 CARBONYL COMPOUND <u>Urotrophine,Hexamethlenetetramin</u> $6\text{HCHO}+ 4\text{NH}_3\text{--}>(\text{CH}_2)_6\text{N}_4 + 6 \text{H}_2\text{O}$ Uses - urinary infection,RDX Write about Popoff's rule Unsymmetrical ketone Keto group with smaller alkyl group $\text{CH}_3\text{CH}_2\text{CH}_2\text{-CO-CH}_3\text{----}\rightarrow$ $\text{CH}_3\text{CH}_2\text{COOH} +\text{CH}_3\text{COOH}$ Aldol Condensation(Pg.no 161-162) Acetaldehyde-----> Acetaldol Cannizaro reaction (Pg.No 166-167) Benzaldehyde-----> Benzyl alcohol Write the Test for Aldehyde Tollens reagent(amm.AgNO_3) Fehling solution A (aqu.CuSO_4) Fehling solution B (alkaline. Na,K tatrte) Benedicts soln(CuSO_4+Na citrate + NaOH) Schiff's reagent(Rosaniline HCl +Water +SO_2) Tollens reagent +CHO Silver mirror (Ag ppt) Fehling solution+CHO->Red ppt Benitic Reagent+CHO-> Red ppt Schiff's reagent+CHO->Red colour What is formalin and its uses 40 % of formaldehyde Preserve the Biological Specimens What is Vinegar 6-8 % solution of Acetic acid</p> <p>Prepared by N.Vellaichamy</p>	<p>Any one of the product act as catalyst (nv) Test For Carboxylic Acid Blue litmus to red Acid +Sodium bicarbonate -> Evolution of CO_2 Acid+Con.H_2SO_4->Ester (fruity odour) UNIT-14-BIO-MOLECULES Carbohydrate r optically active Presence of one or more chiral Carbon What type of linkage hold together monomer of DNA? Phospho diester bond 5 OH of nucleotide and 3 OH of another nucleotide What is mutarotation Sugar =water-interconversion α-glucose to β-glucose Specific rotation $+53^\circ$ Epimers and Epimerisation Sugar differing in configuration At asymmetric centre One epimer is converted to another epimer D glucose-D-mannose D- galactose What is invert sugar(sucrose) Equakl amount of glucose and fructose Optical rotation of reaction reaction mixture changes from dextro to levo</p>	<p>Carbonyl carbon involved in Glycosidic linkage-non red sugar Essential & non Essential A. acid Amino acid can be synthesized our body –non-Essential (Thr,Val) Amino acid cannot be synthesized our body –obtained by Diet Essential(Gly,Ala) Define Isoelectric point At Particular PH-charge of amino acid is neutral What is Zwitter Ion(structure) Amino acid contain both positive & negative charge at particular PH What is Peptide bond First amino acid –carboxyl group Second a.acid-Amino group Amide linkage. What is Denaturation of Protein Losing of higher order structure without losing primary structure</p> <table><tr><td>DNA Deoxyribo sugar life time high replicate stable A=T G=C</td><td>RNA Ribo sugar lifetime high not replicate unstable A=U C=G</td></tr></table> <p>What type of linkage in DNA Hydrogen Bonding, Base-Stacking interaction Define Enzyme Boi Chemical rxn Catalysed by Catalytic protein-Ex Sucrase</p>	DNA Deoxyribo sugar life time high replicate stable A=T G=C	RNA Ribo sugar lifetime high not replicate unstable A=U C=G	<table><tr><td>Hormone Organic substance Secreted by tissue Endocrine gland make hormone Ex insulin</td><td>Vitamins Organic substance Not synthesis by body Used for growth mantainance Ex A,B,C</td></tr></table> <p>Write Deficiency & vitamins Rickets-Vitamin –D Scurvy-Vitamin-C Carbohydrate Optically active Carbohydrate Contain one or more Chiral carbon What are the Types of RNA ? r-RNA, m-RNA, t-RANA What is Glycosidic linkage ? Two mono saccharide are linked by Oxide linkage</p> <p>UNIT-15 CHEMISTRY IN EVERY DAY LIFE Define Antibiotic Medicine kill the Pathogenic bacteria Ex Pencilins Define Food preservatives Its inhibit or areresting the processes of fermentation Or Acidification or decomposition of food by micro organism Ex-Acetic acid</p> <p>Hard Works never Fails</p>	Hormone Organic substance Secreted by tissue Endocrine gland make hormone Ex insulin	Vitamins Organic substance Not synthesis by body Used for growth mantainance Ex A,B,C
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<table><tr><td>Antiseptic Stop or slow down the growth of micro organism Applied on Living tissue H₂ O₂</td><td>Disinfectants Stop or slow down the growth of micro organism Applied on non living things Alcohol</td></tr></table> <p>What is Bio-degradable polymer Polymer readily decomposed by micro organism Ex-PHB, PLA Sweetening agent for Diabetic patient Aspartame Alitame, Saccharin, Sucralose</p> <p>Define Vulcanization Natural rubber is not strong or Elastic, Properties of natural rubber modified by process. Sulphur used for change Physical properties</p> <table><tr><td>Thermoplastic Linear Remoulded Soft on Heating Hard on cooling Ex-PVC</td><td>Thermosetting Cross linked Not remoulded Not soft on Heating Heating infusible mass on heating Ex-Bakelite</td></tr></table> <p>Classify the following polymer Bakelite-Cross linked polymer Nylon-Linear Polymer (nv) Polythene-Linear polymer</p>	Antiseptic Stop or slow down the growth of micro organism Applied on Living tissue H ₂ O ₂	Disinfectants Stop or slow down the growth of micro organism Applied on non living things Alcohol	Thermoplastic Linear Remoulded Soft on Heating Hard on cooling Ex-PVC	Thermosetting Cross linked Not remoulded Not soft on Heating Heating infusible mass on heating Ex-Bakelite	<p>Reducing & non reducing sugar Carbonyl carbon not involved in Glycosidic linkage-reducing sugar Carbonyl carbon involved in Glycosidic linkage- non reducing sugar. <u>Explain Cleansing action of soap</u> Soap action (Palmitate)- carboxylate ion Hydrocarbon-Non polar Carboxyl group-Polar Polar-Hydrophilic –attract H₂O nonPolar-Hydrophobic- Soluble oil and grease Water molecule attached Hydrophilic called- micelles Write Structure of Glucose Molecular Formula C₆H₁₂O₆ Glucose +HI->n-Hexane Indicate six Carbon atom Glucose+Br₂->Gluconic acid Indicate -CHO presence Glucose +acetic anhydride – Penta acetate indicate- Five OH group presence. Write Structure of Fructose Molecular Formula C₆H₁₂O₆ Glucose +HI->n-Hexane Indicate six Carbon atom Glucose+Br₂-> no reaction Indicate -CHO absence Glucose +acetic anhydride –</p>	<p>Penta acetate indicate- Five OH group presence Fructose +Na Hg/reduction Sorbitol +mannitol presence of Ketone.</p> <table><tr><td>Crystalline Long range order Definite shape Definite Heat of fusion Anisotropic True solid</td><td>Amorphous Short range order Irregular shape Not definite heat of fusion Isotropic Pseudo solid</td></tr><tr><td>Hexagonal C.P ABA arrangement 3rd layer resembles first Layer Tetrahedral voids created</td><td>Cubic C.P ABC Arrangement 3rd layer not resembles first layer Octahedral voids created</td></tr><tr><td>Tetrahedral void Sphere of 2nd layer above void of first layer Closed back n Voids equal to 2n Four spheres joined</td><td>Octahedral void Sphere of 2nd layer partially cover void of first layer Closed back n Voids equal to n Six spheres joined</td></tr></table>	Crystalline Long range order Definite shape Definite Heat of fusion Anisotropic True solid	Amorphous Short range order Irregular shape Not definite heat of fusion Isotropic Pseudo solid	Hexagonal C.P ABA arrangement 3 rd layer resembles first Layer Tetrahedral voids created	Cubic C.P ABC Arrangement 3 rd layer not resembles first layer Octahedral voids created	Tetrahedral void Sphere of 2 nd layer above void of first layer Closed back n Voids equal to 2n Four spheres joined	Octahedral void Sphere of 2 nd layer partially cover void of first layer Closed back n Voids equal to n Six spheres joined	<p>Define Co-Polymer & Example Polymer contain two different kinds of monomer Ex Nylon 6,6 Define polymer Combination of monomer give polymer is called polymerization.</p> <p>Prepared by N.vellaichamy M.sc.B.ed Department of Chemistry Ponnu Matric Higher sec. School Dharapuram Tiruppur district For More details 7010431615 nvchamychemist@gmail.com Be confident Face Every thing in the universe – All the Best . If you find Mistake Please Correct it or Consult Your Teacher .</p>
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