Class: 12th

Chemistry

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Most Important Guess Paper

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"یہ گیس پیپر اتنا اہم ہے کہ آپ کی محنت اور یہ سوالات آپ کو کامیابی کی بلندیوں تک پہنچائیں گے، انشاءاللہ! ان کو اچھی طرح تیار کر لیں۔"

Most Important Questions

Chapter No # 1

What is Newland law of octaves? Defects of Mendeleev periodic table. Lanthanide contraction? Why metallic character increases from top to bottom in a group of metals? Define E. A and its trend. Why oxidation state of noble gases is zero? Oxidation State vary in a period and constant in a group. Give reason. Why diamond is non-conductor and graphite are fairly good conductor? ZnO behaves as an amphoteric oxide. Why? How hydrogen resembles with elements of group 4-A? Why I. E increases down the group and increases along the period? Why 1st E.A is negative and 2nd is positive? Why melting and boiling point of elements belonging to group 5-A to 7-A? Alkali metals give ionic hydrides? Justify? $Pbcl_2$ is mainly ionic but PbCl4 is fairly covalent? Why ? Why Na_2O is basic but P2O5 is acidic character Why?

Q. 14 From exercise (a, b, d, f, g)

Chapter No # 2

Why group 2-A elements are called alkaline earth metals? What happened when lithium carbonate is heated and Be is treated with NaOH and lithium hydride reacts with water? Justify BeO is an amphoteric oxide. Alkali and alkali earth metals are reactive metals. Justify? Give chemical formula of Beryl and Asbestos. Why lithium differs from its own family members? Why the aqueous solution of Na_2CO_3 is alkaline in nature? What is the function of calcium in plant growth. Reaction of alkali metal oxide with water is an acid base reaction? Explain. Alkali metals are strong reducing agent? Why? What is milk of magnesia? Advantages of Downs cell. Why $CaCl_2$ is added in molten NaCl? Major problems arise in Nelson cell? Role of gypsum in agriculture? Justify.Why limewater turn mily with CO2?

Q.10 & **11 From exercise (c, d, e, f, g)**

Chapter No # 3

Write uses of borax and boric acid? Action of aqueous solution of borax on litmus? What is the reaction of heat on orthoboric acid? How borax is converted into boric acid and versa? Discus chemistry of Borax bead test. Names and chemical formula of boric acid. How will you prepare borax from colemanite and boric acid? Uses of aluminum and sodium silicate. What is meant by chemical garden? What is silicon giving its uses? White lead is not a good pigment? Reason. How orthoboric acid react with ethanol and sodium carbonate? What is the effect of temperature on viscosity of silicones? Aluminum sheets are said to be corrosion free. Comment. Borate glazes are better than

silicate glazes. CO_2 is non polar but CO is polar? Give reason? How weathering phenomenon converts potassium feldspar into clay? How Al finds its uses in metallurgy and photoflash bulbs? Silicates and uses of silicates.

Chapter No # 4

What is aqua regia? How does P_2O_5 react with water? Dissimilarities of oxygen and sulphur and also write it properties. Why SO_3 is dissolved in H_2SO_4 not in water? Why does aqua regia dissolve gold and platinum? How does nitrogen differ from other elements of its group? Give advantages of contact process for the manufacture of sulphuric acid. NO_2 and HNO_3 is a strong oxidizing agent. Prove the truth of this statement giving examples. P_2O_5 and H_2SO_4 is dehydrating agent. Give example. Describe "Ring Test" for the confirmation of nitrate ions. Justify that conc. H_2SO_4 acts as oxidizing and dehydrating agent. Uses of H_2SO_4. Give two methods of preparation of PCl_3. Give four uses of nitric acid. N_2O supports combustion. Give two reactions in favor of the statement. Give reaction of Cu with dilute and conc. HNO_3.

Chapter No # 5

Why iodine has metallic luster? Peculiar behavior of fluorine. Halogens are strong oxidizing agent. Justify. On what factors oxidizing power depends? Why HF is weaker acid? HF is weak acid while HCl is strong acid. Why? reaction of chlorine with hot and cold NaOH. Discus disproportionation reaction. How halogen acids are ionized in water? Uses of bleaching powder. What is available chlorine? Reaction of bleaching powder with HCl and NH_3. What I freons and Teflon's? What is iodized salt? Four uses of Nobel gases. names and formula of oxyacids of chlorine. how bleaching powder reacts with ammonia and excess H_2SO_4, Uses of halogens and iodine.

Chapter No # 6

Why d and f block elements are called transition elements? What are non-typical transition elements? Four properties of transition elements. What are interstitial compounds? Why transition elements show variable valency of oxidation state? Development of colours in transition complexes? give reason. What is sacrificial corrosion? Uses of $KMnO_4$. Why M.P AND B.P are max somewhere in the middle of the D block elements? Difference between paramagnetic and Dimagnatic substance? What is d-d transition? What is ligand? Give it types. Define substation alloy with example. How entrapped bubbles of gases are removed from teel? Give to methods for the preparation of $K_2Cr_2O_7$ and also write its uses? What is tin planting? what happen when it is damaged? How $KMnO_4$ PREPERED by electrolytic method? Discus galvanizing process. Difference between wrought iron and steel.

Chapter No # 7

What is vital force theory and its significance. How vital force theory rejected? What is natural gas? Carbonization of coal? **Cracking of petroleum and also define its types (S.Q+L.Q)** Define reforming of petroleum. Define Catenation. How octane number of alkanes can be improved? Homocyclic and heterocyclic compounds. What is alicyclic and aromatic compounds. Define Functional group, position isomerism, metamerism .and Tautamerism. why free rotation around a single bond but not a double bond? Write the structural formulas of two possible isomers of C4H10. How coal was formed in nature? What is meant by crude oil?

Chapter No # 8

Prepare alkanes from Clementson and wolf Kirshner methods. How ethane can be prepared by Kolbe, electrolysis? Convert CH4 to CH2O. four uses of methane. why pi bond is more reactive? ethene can be converted to ethyl alcohol. give reaction. Mechanism of ozonolysis. What is hydrogenolysis? Alkanes are less reactive than alkenes? Mention two uses of ethyne. Define Markownikov' rule. Illustrate with an example. Covert Ethyne to acetaldehyde. What is Baeyer's test. What is its use? What is Raney Nickel. Covert Ethyne to acetaldehyde. Describe the polymerization of ethane. How Mustard gas is prepared? How will you prepare methyl nitrile from ethyne?

Q. 23 (1,2,4,5)

Chapter No # 9

What is monocyclic and polycyclic aromatic hydrocarbons? Write possible isomers of xylene. Define resonance and resonance benzene prepared from acetylene give reaction. Give reaction which show benzene is unsaturated hydrocarbon. Mechanism of sulphonation. Reaction of benzene with oxygen. How toluene can be converted to benzoic acid? Meta directing group? How n-hexane is converted to benzene? Briefly explain X-ray studies of benzene. Prove that benzene has a cyclic hexagon structure. What are fused rings aromatic compounds. Give example. What is the objection in Kekule's formula for benzene? Draw resonance structures for benzene. Give two methods of preparation of benzene in laboratory. Briefly explain atomic orbital treatment of benzene. What happens when toluene is reacted with Cl2 in the presence of sunlight? What is Wurtz synthesis?

Q. 7(1 TO 5)

Chapter No # 10

Differentiate between electrophile and nucleophile. What is leaving group and substrate? What are orthoptera directing groups? Give example. How will you prepare alkyl halide from $SOCl_2$? How will you convert CH_3-CH_3 to $(CH_3$-$CH_2)4N^+Br^{-1}$? Give example of E1 reaction. Give reaction of alkyl halide with sodium lead alloy. Give reaction of ethyl bromide with ammonia types of alkyl halides with example. Prepare alkyl halides by two methods. Write excellent method to prepare alkyl iodide. Discus E-2 mechanism. Describe briefly Wurtz synthesis. What is beta alimination reaction? What is Grignard reagent? How would you convert acetone into t-butyl alcohol? Two methods for the preparation of ethyl halides from ethanol? Preparation of alkyl chloride from alcohol? Factors on which reactivity of alkyl halides depends?

Chapter No # 11

Define types of alcohol. Why ethyl alcohol is liquid and ethyl chloride is gas? Define denaturing of alcohol. Alcohols react with H2SO4. Lucas's test. Difference between 1 propanol and 2 propanol. Why absolute alcohol cannot be prepared by fermentation? Write two uses of methanol, ethanol and methyl alcohol. **Two methods for the preparation of phenol (S.Q+L.Q). Why phenol is more acidic than alcohol? (S.Q+L.Q)** Preparation of Bakelite. Prepare ether by Williamsons synthesis. How will you distinguish between methanol and ethanol? Discuss the reactivity of alkyl halides on the basis of bond energy. Water has higher boiling point than ethanol. Explain. Prepare aldols from ethanal and methanal. Write the reaction of ether with HI. How will

you convert methanol into ethanol. **How would you differentiate between primary secondary and tertiary alcohols by LUCAS Test with examples (S.Q + L.Q).**

Chapter No # 12

Give industrial method of preparation of formaldehyde and acetaldehyde. prepare acetone from calcium acetate. Iodoform test? Justify Cannizaro reaction is elf oxidation reduction reaction. What is haloform reaction? Mechanism of acid catalyzed addition reaction of aldehyde. Application of iodoform test. Benedict solution test. Silver mirror test and tollens test. Fehling solution test. What is sodium nitroprusside test? **Uses of acetaldehyde and form aldehyde (S.Q + L.Q)**. What is formalin? How will you convert ethane to acetaldehyde. What are condensation reactions? Give general mechanism of acid catalyzed addition reactions of carbonyl compounds.

Q. 16 (2,4,5,7,8,10) Q. 17 (1,2,3,6)

Chapter No # 13

What are fatty acids? How acetic acid I prepared by oxidation cleavage of 2 butane? Why B.P of carboxylic acid is high? Give reactions of carboxylic acid in which OH group are involved? What happens when ammonium acetate is heated? Convert acetic acid into ethane and ethyl alcohol. What is glacial acetic acid? Uses of acetic acid. Acidic and neutral amino acids. Formula of genie and alanine. Essential and non-essential amino acids. What is zwitter ion? Acidic and basic character of amino acids. Structural formula of phthalic and malonic acid. How acetic acid react with PCl_5, $SOCl_2$. Covert acetic acid into acetamide? How carboxylic acid reacts with nitrites? Fatty acids with example, hydrolysis of ester, oxidative cleavage of alkenes, Discuss Strecker's synthesis.

Q. 8 & 9 from exercise

Chapter No # 14

Classify polymers on the basis of monomers. Thermoplastic and thermosetting polymers. Define condensation polymerization. What are epoxy resins? Give its use. How nylon 6, 6 can be prepared? What is derived protein and denaturation of protein. Use of protein. Hardening of oil. Diff, between oil and fat. Saponification and iodine number. Rancidity of oils and fats. Acid number. Structural formula of cholesterol importance of lipids. Diff. between DNA and RNA. What are carbohydrates. How they are classified. Define enzymes. Give their two properties. What are lipids? Give two physical properties. What is degree of polymerization? What are peptides. How will you prepare dipeptide? Explain esterification of amino acids using ethanol

Chapter No # 15

What s fertilizer and why they are required? classify element essential for plant growth. types of nutrients. qualities of good fertilizer. prilling of urea. imp of potassium fertilizer. Why nitrogen is important for plants? what is phosphatic fertilizers? Define clinker and cement and write its components. flow sheet diagram for the manufacturing of cement. raw materials for cement. define and its raw material. write two woody and non-wordy raw material for paper and pulp. how lignin is removed from paper? Why is meant by setting of cement? Write average composition of cement. Give different zones in rotary kiln and their temperature rages during cement' preparation. Give reaction of preparation of urea by using NH_3 and CO_2. Write a note on di-ammonium phosphate.

Chapter No # 16

Define environmental chemistry and write its components. What is ecosphere and hydrosphere? What is lithosphere and ecosystem. What are primary and secondary pollutant? give example. What is acid deposition? Conditions for the formation of smog. How ozone layer depleted? Why CO is highly poisonous gas? Define photochemical Smog and write its properties. Why ozone layer depleting? What will happen when ozone will decrease? How detergents are threat to aquatic life? Discus livestock waste as water pollutant? What is COD and BOD? discus detergents as water pollutants. Define transformation and polymerization. Where they are used? What is reducing smog? Give its source. What is meant by aeration of raw water? What are leachates? What they contain?

Most Important Long Questions

- What are Hydrides and Halides? Give their classifications.
- **Discuss the position of hydrogen in group IA and IVA.**
- Ionization energy and electron affinity and also write its trend.
- **Define Mendeleev's periodic law. Discuss improvements in Mendeleev's periodic table.**
- **Similarities and dissimilarities of hydrogen with group 1 A and 4A.**
- Discus the peculiar behavior of Be with respect to other members of 2-A group.
- How Li behaves different from the elements of its own group?
- **How Na metal is prepared by Down's cell? Mention advantages of this process.**
- Discus the role of gypsum in industry and agriculture.
- **Write eight points to describe the role of lime in industries and Agriculture.**
- **Explain preparation of Sodium Hydroxide (NaOH) by Diaphragm cell.**
- **Methods of Manufacturing of bleaching powder along with Diagram and also explain Hansen clever and Backmann method**
- Reaction of chlorine with cold and hot NaOH (Disproportionation reactions)
- **Peculiar behaviour of fluorine and reactions of bleaching powder with dil.& Conc. H_2SO_4, NH_3, HI, HCl, H_2O.**
- Define orbital Hybridization. Discuss sp^1, sp^3 and sp^2 hybridization, give one example in each case.
- **Four types of isomerism with one example each especially geometric isomerism and discuss Different types of structural isomerism.**
- **Explain reforming of petroleum with the help of example.**
- Define functional Group. Also differentiate b/w homocyclic and heterocyclic compounds.
- Oxidation of aldehyde and ketones
- **Discuss acidic nature of alkynes with two examples.**
- Halogenation of alkanes and its reactions mechanism
- **Prepare ethane from Kolbe's electrolytic method along with mechanism Also Give Bayer's test.**
- **Discus any two methods for the preparation of alkenes.**
- How ethene react with Br_2, HCl, O_2, S_2Cl_2, H_2SO_4 and O_3.
- Polymerization reactions of acetylene

- **Prove the stability of benzene by comparing it with hypothetical compounds. Explain the term resonance energy.**
- Modern concepts about the structure of benzene atomic orbital treatment of benzene **What are Friedel craft reactions? Explain mechanism of alkylation and acylation.**
- Write methods of preparation of benzene. Also discuss orientation (Ortho, para and meta)
- Reaction of phenol with Conc. HNO_3 and Bromine water, Zn, NaOH, H_2SO_4, H_2, CH_3COCl **Prepare picric acid, 2, 4, 6-tribromophenol, cyclohexanol and Bakelite from Phenol? Give two reactions in which benzene behaves as saturated and two reactions in which benzene behaves as unsaturated hydrocarbons**
- **How methanol and ethyl alcohol (ethanol) is prepared in industry?**
- **Q. # 12 FROM EXERCISE**
- Write chemical reactions of C2H5OH with the following: $SOCl_2$, HCl, NH_3, Na How ethyl alcohol is obtained by the fermentation of molasses and starch?
- **Define and explain aldol condensation and Cannizaro reaction along with its mechanism. Reactions of formaldehyde with HCN, $NaHSO_3$, Conc NaOH, CH_3Mg I & Reactions of acetaldehyde with HCN, $NaHSO_3$, dilute NaOH, CH_3MgI, I_2/NaOH**
- Mechanism for the addition of sodium bisulphite to acetone. What is its utility?
- **Tests for the identification of carbonyl compounds**
- **Manufacturing process of urea in detail**
- **Setting of cement (reactions 1 to 7 days and 24 hours) and wet process for the manufacturing of cement What** are the prospectus of fertilizer and paper industry in Pakistan? write essential qualities of good fertilizer.
- Properties of complex compounds
- **Para magnetism Bessemer's** convertors
- **Electrochemical theory**
- **Write down the methods for the preparation of $K_2Cr_2O_7$ and $KMnO_4$**

- **"Bold questions are very important, so make sure to focus on them!"**