2nd Year Chemistry
Taleem City Guess Paper

پنجاب کے تمام بورڈز (لاہور، راولپنڈی، فیصل آباد، سرگودھا، گوجرانوالا، ساہیوال، ملتان، بہاولپور، اور ڈیرہ غازی خاں) کے لئے۔

Chapter# 1

Important Short Questions

1. Justify that ZnO is amphoteric in nature.
2. Although both sodium and phosphorus are present in the same period of the periodic table, yet their oxides are different in nature, Na_2O is basic while P_2O_5 is acidic in character.
3. Why the ionic radii of negative ions are larger than the size of their parent atoms?
4. What is electron affinity? Why is the second value of electron affinity of an element usually shown with a positive sign? / What is electron affinity? Give its trend in periodic table.
5. Why metallic character increases from top bottom in a group of metals?
6. Why the oxidation state of noble gases is usually zero? (taleemcity.com)
7. Why diamond is a non-conductor and graphite is fairly a good conductor?
8. Write similarities of hydrogen with alkali metals?
9. Zn, Cd and Hg were placed with Alkaline earth metals in Mendeleev's table?
10. Negative ion is always bigger in size than its parent atom. Why? (taleemcity.com)
11. Why melting and boiling points of elements belonging to group VA-VIIA are lower?
12. Write two similarities and two dissimilarities of hydrogen with IV-A. group of elements.
13. Write down two similarities and two dissimilarities of hydrogen with halogen.
13. Why metals are good conductors?
14. Why the size of an anion is always greater than its parent atom?
15. Give differences of lithium from its own family members.
16. Define hydration energy. The hydration energies of the ions are in the following order. Justify. $Al^{+3} > Mg^{+2} > Na^{+}$
17. Why oxidation number of noble gases is usually zero?

Important Long Questions

1. Justify position of hydrogen at the top of Group IA, IV-A and VIIA in the periodic table.
2. Define ionization energy. Discuss its trend in periods and groups.
3. Define hydrides. Give their classification and properties. (taleemcity.com)
4. State Mendeleev's Periodic Law. What are the improvements made in Mendeleev's Periodic Table?
5. Give trends of metallic character in groups and periods and discuss the impact of atomic size on it.

Chapter# 2

Important Short Questions

1. What is the role of KO2 in the breathing equipment? / What is the significance of KO_2 for mountaineers?
2. Why the aqueous solution of Na_2CO_3 is alkaline in nature?
3. Why lime water turns milky with CO_2 but becomes clear with excess CO2.

4. BeO is amphoteric oxide. Show with two suitable reactions. (taleemcity.com)
5. How gypsum is converted into plaster of pairs?
6. Why 2% gypsum is added in the cement?
7. Why is lime added to an acidic soil?
8. How lime mortar is prepared? Explain with chemical equations?
9. What is milk of magnesia and for which treatment is it used? (taleemcity.com)
10. What are the advantages of Down's cell for the preparation of sodium on commercial scale? Why Down's cell is preferable method for the preparation of sodium on large scale?
11. What are the main uses of plaster of Paris?
12. Give two similar properties of lithium and magnesium. (taleemcity.com)
13. What are two major problems faced during the working of diaphragm cell?
14. What reaction occur when (i). Lithium carbonate is heated (ii). Sodium bicarbonate is heated (iii) Lithium hydride is treated with water. (taleemcity.com)
15. Write formulas of: (i) Beryl (ii) Asbestos (iii) Chrysoberyl (iv) Calcite (v) Barite (v) Dolomite

Important Long Questions

1. Explain the preparation of sodium metal by Down's cell. **(Most imp.)**
2. Write a short note on the role of Gypsum in agriculture. **(Imp)**
   Write the commercial method for the preparation of NaOH? **(Imp)** OR
3. Discuss the preparation of sodium hydroxide on commercial scale by diaphragm cell or Nelson's cell. (taleemcity.com)
   Explain peculiar behavior of Beryllium? **(Most imp.)**
4. Write four points of differences between beryllium and its group.
   Discuss the peculiar behavior of Lithium with
5. respect to the other members of alkali metals. **(Most imp.)**

Chapter# 3

Important Short Questions

1. What is tincal. How would you prove that its aqueous solution is alkaline in nature?
2. What are silicones? Why are liquid silicones preferred over ordinary organic lubricants?
3. Why is CO_2 a gas at room temperature while SiO_2 is a solid? / Explain the structure of CO2.
4. What is chemical garden? (taleemcity.com)
5. Write uses of Borax and boric acid.
6. What is chemistry of Borax-bead test?
7. How will you convert boric acid into borax and vice versa? (taleemcity.com)
8. Write four uses of sodium silicate.
9. Write the reactions of boric acid with: (i) Ethyl alcohol (ii) NaOH
   In what respects, carbon behaves differently from
10. other members of group IV-A?
    Give two similarities between carbon and silicon/silicate.
11. Why aqueous solution of Borax is alkaline in nature?
12. Give the formulas of four boric acids with names. (taleemcity.com)
13. How aluminum reacts with aqueous sodium hydroxide? (taleemcity.com)
14. How is Borax used as water softening agent?
15. Why are borate glazes preferred over silicate glazes? (taleemcity.com)
16. What is vitreous silica?
17. Why are liquid silicones preferred over ordinary organic lubricants?
18. Give the names and the formulas of different acids of boron.

This year, there will be no long from this chapter.

Chapter# 4

Important Short Questions

1. Why does aqua regia dissolve gold and platinum?

2. Write down the dissimilarities between oxygen and Sulphur. (taleemcity.com)
3. Why is SO_3 dissolved in H_2SO_4 and not in water?
4. Describe "Ring test" for the confirmation of the presence of nitrate ions in solution.
5. Write down the equation for the reaction between conc. H_2SO_4 and copper and explain what type of reaction is it.
   Justify that conc. H_2SO_4 acts as dehydrating agent by writing two equations.
6. NO_2 is a strong oxidizing agent. Prove the truth of this statement giving examples.
7. P_2O_5 is a powerful dehydrating agent. Prove giving example. (taleemcity.com)
8. How does P_2O_5 react with water in cold and hot states?
9. How does HNO_3 react with (a) Cu (b) Mn
10. How does NO_2 react with KI and H_2S?
11. Write four uses of HNO_3.
12. How does nitrogen differ from other elements of its group? (taleemcity.com)
13. How NO_2 is prepared from: (i) Lead nitrate (ii) $Cu+HNO_3$
    Write any two methods for preparation of nitrogen oxide (NO).
14. Write any four properties of sulphuric acid.
15. Nitrous acid is a reducing as well as oxidizing agent justify giving chemical reaction.
16. Discuss different allotropic forms of phosphorous?

This year, there will be no long from this chapter.

Chapter# 5

Important Short Questions

1. Give important uses of Helium.
2. What is "Iodized Salt"?
3. What are Freons and Teflon? Give their uses?
4. Why iodine has metallic luster?
5. How are halogen acids ionized in water?
6. Halogens are strong oxidizing agents. Justify.
7. Why fluorine shows peculiar behavior? Give four reasons? (taleemcity.com)
8. Why HF is a weak acid than other halogen acids (HCl)?
   Write four properties of hydrogen fluoride.
9. Write any four applications of noble gases.
10. What is halothane? Write its formula.
11. How XeF2 and XeF4 can be prepared?
12. Write any four applications of Noble gases.
13. Oxidizing Power of halogen depends upon which factors? (taleemcity.com)
14. Give reaction of Chlorine with cold and hot NaOH.
15. What is bleaching power? How bleaching powder is prepared by Hasenclever's method?
16. Write four uses of bleaching powder.

Important Long Questions

1. Discuss peculiar behaviour of fluorine. **(Most Imp)**
2. How bleaching powder is prepared? Give its uses. **(Most Imp)**
3. What happens when bleaching powder reacts with: dil. & con. H_2SO_4, NH_3, HCl, H_2O. **(Most Imp)**
4. Discuss relative reactivities of halogens as oxidizing agent. Also describe commercial uses of halogens and their compounds? **(Imp)**
5. Write chemical reactions of fluorides of Xenon. **(Imp)**

Chapter# 6

Important Short Questions

1. Why d and f block elements are called transition elements? (taleemcity.com)
2. Why Transition elements compounds are coloured and variable oxidation state?
3. Differentiate between Typical and Nontypical transition elements.
4. How galvanizing helps protecting iron from rust.
5. What is chromyl chloride test?
6. How chromate ions are converted into dichromate ions?

7. What are chelates? What are chelates found in transition metal complexes?
8. What is ligand? Give types of ligands.
9. Define coordination number? Give example.
10 What is coordination sphere?
11 What is sacrificial corrosion?
12 Write the uses of $K_2Cr_2O_7$.
13 What are interstitial compounds?
14 How entrapped bubbles of gases are removed from steel.
15 Define paramagnetic and diamagnetic substances. (taleemcity.com)
16 Why does damaged tin plated iron get rusted quickly.

This year, there will be no long from this chapter.

Chapter# 7

Important Short Questions

1. What is vital force theory and why vital force theory was rejected?
2. What is catalytic cracking?
3. What is an octane number and how it is improved? (taleemcity.com)
4. What is destructive distillation?
5. What is natural gas? Write its two uses.
6. What are heterocyclic compounds?
7. Define aromatic compound, give an example.
8. What are alicyclic compounds? Give an example.
9. Define functional group. Give two examples containing oxygen.
10 What is isomerism? Explain with suitable examples.
11 Define metamerism with examples.
12 What is Zwitter ion? How is it formed? Write down its structural formula.
13 Define Cis-trans isomerism. Give one example. / Explain geometrical isomerism. Give one example. (taleemcity.com)
14 Define tautomerism by giving one example.
15 Why there is a free rotation around single bond, but no free rotation around double band?

Important Long Questions

1. Explain reforming of petroleum with the help of suitable example.
2. Define cracking and explain its type with examples. (taleemcity.com)
3. Define hybridization. Discuss the structure of ethne/ ethyne on its basis. **(Hybridization Sp2, Sp3 with example are most important)**
4. Define isomerism. Explain geometrical isomerism with examples.
5. How organic compounds are classified? Give suitable example of each type.

Chapter# 8

Important Short Questions

1. Why alkanes are less reactive than alkenes?
2. What are clemmenson and Wolf-Kishner reduction reactions? How they differ?
3. Ethane can be converted into ethyl alcohol write equation? (taleemcity.com)
4. What is Raney-Nickel? Where it is used?
5. What is Baeyer's test? / How Baeyer's test is used to detect unsaturation in organic compounds?
6. Define Markownikov's rule and give one example.
7. Give mechanism of O3 Onloysis of ethane?
8. Prepare CiS and Trans alkenes from alkyne along with chemical equation.
9. How is ethyne converted into ethanol?
10 Convert CH triple bond CH into oxalic acid.
11 How ethyne is converted to (a) acetaldehyde (b) benzene Convert methane into: (i) Formaldehyde (ii) Nitromethane Synthesize i.benzene ii. Oxalic acid from ethyne.
12 Define polymerization? How can we convert ethene to polyethene?
13 How do you convert 2-butyne into cis- and trans –2 butene?

14 Why does alkane shows un reactivity?
15 Why pi-bond is more reactive than sigma-bond?
16 What is Hydrogenolysis?
17 How do you distinguish between ethane and ethyne? (taleemcity.com)
Convert methane into formic acid.
18 Convert ethyne into acetaldehyde.
Convert 1-butene to 1-butyne.
19 Give fours uses of methane.

Important Long Questions

1. Describe any four methods for the preparation of alkenes.
2. Prepare ethane from Kolbe's electrolytic method. Write down its mechanism.
Prepare ethyne from Kolbe's electrolytic method. Write down its mechanism.
3. Describe with examples the acidic nature of alkynes? (taleemcity.com)
4. Give comparison of reactivity of alkanes, alkenes and alkynes.
5. State Markownikov's rule. Give reactions of HBr with (i) Propene (ii) 2-Butene (iii) 1-Butene

Chapter# 9

Important Short Questions

1. Discuss the objections to the Kekule's model of benzene? / What arguments were given by Kekule to confirm the regular hexagonal structure for benzene? (taleemcity.com)
2. Write down the resonance structure of benzene.
3. Define resonance energy.
4. What is Wurtz-Fittig Reaction? Give an example.
5. Give the mechanism of Nitration and halogenation of benzene.
Explain sulphoration of benzene with mechanism of reaction.
6. What happens when Ozone is reacted with Benzene?
7. Prepare m-chloronitro benzene from benzene in two steps.
Benzene can be prepared commercially from acetylene. Give reaction with conditions.
8. How benzene is converted into maleic acid by catalytic oxidation?
9. Draw the structure of (a) Naphthalene (b)Anthracene
10 What are polycyclic aromatic hydrocarbons?
11 Discuss the x-ray structure of Benzene
12 How can we prepare benzene from? (i) n-Hexane (ii) Benzene sulphonic acid. (taleemcity.com)
13 Write the general mechanism for the electrophilic substitution reactions of benzene?
14 What happens when chlorine is passed through Benzen in sunlight.
15 Write any four ortho para directing groups.

Important Long Questions

1. Explain the structure of benzene on the basis of atomic orbital treatment
2. Write down four methods of preparation of Benzene. (taleemcity.com)
3. What are Friedel-Crafts reactions? Explain mechanism of alkylation and Acylation of Benzene.
4. Detail out two reactions in which benzene behave as saturated hydrocarbon and two reactions if behave as unsaturated.
5. Write down the mechanisms of the following reactions.
(i) Sulphonation
(ii) Nitration of benzene

Chapter# 10

Important Short Questions

1. What are primary and tertiary alkyl halides? Give one example each.
2. Convert ethyle bromide into (i) n-butane (ii) Ethene (iii) Ethyl alcohol (iv)Propane
3. What is wurtz reaction? Give its importance.
4. Give two examples of nucleophilic substitution reactions. (taleemcity.com)
5. What is β-Elemination reaction?
6. How is tetramethyl and tetraethyl lead is prepared?

7. How would you prepare alkyl halide from alcohol and thionyl chloride?
8. What are elimination reactions? Give examples of E1 and E2
9. Write the mechanism of SN1 reactions
10 What are electophile and nucleophile?
11 Justify given order of react5ivity on the basis of bond energy. R – I > R – Br > R – Cl > R - I
12 Give methods to prepare alkyl halides from alcohols. (taleemcity.com)
13 What is Grignard reagent?
14 Convert ethyl alcohol into their respective halides by using PCl3 and PI5
15 Starting from C2H4Br how will you prepare ethane and ethene?
16 How do we get alkyl nitriles from Grignard's reagent?

Important Long Questions

1. What are β-elemination reaction? Differentiate between E1 and E2 reactions.
2. What are SN reactions? Differentiate between SN1 and SN2 reactions. (taleemcity.com)
3. What are Grignard's reagents? How these react with carbonyl compounds?
   How does Ethyl magnesium bromide react with: i. CO2 ii. CH3COCH3
4. Explain Nucleophilic substitution Unimolecular reaction (SN1) with example
5. Discuss SN2 reactions of alkyle halide in detail.

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Chapter# 11

Important Short Questions

1. What do you mean by denaturing of alcohols?
2. Give the structural formulae of
   (i)Lactic acid (ii) Tartaric acid (iii) Picric Acid (iv) P-hydroxy benzyl alcohol (v) carbolic acid
3. Absolute alcohol cannot be prepared by fermentation process, why?
4. Explain Williamson synthesis for the preparation of ethers?
5. Define fermentation. What are the essential conditions for fermentation process?
6. Ethyl alcohol is a liquid while methyl Chloride is a gas. Why? (taleemcity.com)
7. How Phenol is prepared by Dow's method. / Give two methods for the preparation of phenol.
8. Prepare Bakelite from phenol?
9. Give the reactions of phenol with conc. H2SO4 and acetyl chloride.
10 How does picric synthesis take place?
11 Ethanol gives different products with conc.H2SO4 under different conditions. Justify.
12 What is Lucast test?
   How can we distinguish between methanol and ethanol?
13 Convert methanol into ethanol and acetone into ethyle alcohol.
14 How chloro benzene is converted into phenol.
15 Give reactions of alcohols in which C–O bond breaks?
16 Why water has higher boiling point than ethanol?
17 What is wood-spirit? How is it prepared from water gas? (taleemcity.com)
18 What are rectified spirit, commercial alcohol and absolute alcohol?
   Define fermentation. Give its conditions.
19 Absolute alcohols cannot be prepared by fermentation. Why?

This year, there will be no long from this chapter.

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Chapter# 12

Important Short Questions

1. What is cannizzaro's reaction? Write one example.
2. What is silver mirror/Tollen's test? / Discuss the chemistry of Tollen's test.
3. What is Fehling's solution test of aldehyde? OR How aldehydes can be distinguished by Fehling's solution test.
4. Write four uses of formaldehyde?
5. Write four uses of Acetaldehyde?

6. What is idoform test? Give its uses. / How iodoform is prepared from acetaldehyde and ethyl alcohol?
7. Write the mechanism of the reaction of HCN with carbonyl compounds.
8. What is formalin? (taleemcity.com)
9. Prepare acetone from calcium acetate.
10 Give industrial preparation of formaldehyde.
11 What is Haloform reaction? Give its uses.
12 How acetaldehyde is converted into lactic acid? **OR** How α-hydroxy acids are prepared from Acetaldehyde.
13 How the aldehydic group can be prevented against oxidizing agents. OR How acetaldehyde reacts with ethyl alcohol?
14 Give two tests for distinguishing between an aldehyde and a ketone. OR How Aldehydes can be distinguished by Benedict's solution test?
15 What is formalin?

Important Long Questions

1. Write a note on Cannizzarro's reactions. **OR** Discuss mechanism for the Cannizzaro's reaction of HCHO. **OR** What type of aldehydes give cannizzaross reaction/ Give its mechanism.
2. What is Aldol condensation? Give mechanism.
3. Write four tests by which aldehyde can be distinguish from ketones. (taleemcity.com)
4. How 2,4-dinitrophenyl hydrazones are prepared? Write mechanism of ammonia derivatives with carbonyl compound in general.
5. Describe the mechanism of the reaction of sodium bisulphite with acetone.

Chapter# 13

Important Short Questions

1. What are essential and non-essential amino acids?
2. What are zwitter ions and how they are produced? Write its structural formula.
3. Explain acidic and basic behavior of amino acids?
4. How acetic anhydride is prepared from acetic acid?
5. What are amino acids? Give two examples.
6. Define neutral amino acids? Give examples.
7. Write formulae of Glycine, Alanine, melonoic acid and phthalic acid?
8. Write down the mechanism of ester formation.
9. How would you convert CH3 COOH to CH3 CONH2
10 How amino acid is synthesized. Give one example.
11 What is peptide bond? Write down formula of a dipeptide? (taleemcity.com)
12 How would you prepare carboxylic acid from Grignard Reagents?
13 What are acid anhydrides? How can we prepare acetic anhydride?
14 Write important uses of acetic acid?
15 How carboxylic acids are prepared by oxidative cleavage of alkenes?

Important Long Questions

1. Write down any four methods of preparation of acetic acid with reactions?
2. Define Zwitter ion. Discuss effect of acidic and basic medium on the dipoler ion structure of amino acid. (taleemcity.com)
3. Convert acetic acid into i. Methane ii. Acetyl chloride
4. Write a short note on acidic and basic character of amino acids.
5. Write down reactions of acetic acid with: Na2CO3, PCl5, C2H5OH, NH3, SOCl2, HI/P

Chapter# 14

Important Short Questions

1. What is meant by rancidity of fats and oils? Why it occurs?
2. Write any two differences b/w DNA and RNA.
3. In what way oil, fats are different?

4. What is condensation polymerization? Give an example.
5. How proteins are denatured?
6. Write down the importance of proteins.
7. Write four uses of lipids.
8. Give two differences b/w oils and fats?
9. Define saponification number and iodine number. (taleemcity.com)
10 What are thermosetting polymers? Give two examples.
11 What do you mean by hardening of oils and fats? / How oils are converted into fats
12 Define saponification number
13 How PVC is prepared? Also give its uses
14 What is chemical nature of enzyme? Classify them.
15 Write down the mechanism of addition polymerization.

This year, there will be no long from this chapter.

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Chapter# 15

Important Short Questions

1. What are fertilizers? Why are they needed?
2. What are micronutrients?
3. What are macro-nutrients? Name any three.
4. Write any four points of essential qualities of a good fertilizer? (taleemcity.com)
5. Give the important properties of fertilizers.
6. Why ammonium nitrate is not added to the crop of Paddy rice? OR
   Ammonium nitrate is a useful fertilizer for many crops except paddy rice, why?
7. What are phosphatic fertilizers? What is their role in plant growth? Give two formulas of phosphatic fertilizers?
   What are Potassium Fertilizers? Write importance of potassium fertilizers.
8. What is cement? Which raw materials are used for its preparation?
9. What do you mean by setting of cement. Write down the reactions taking place in first 24 hours
10 Define paper. (taleemcity.com)
11 Write names of four non-woody raw materials for the production of paper and pulp?
   How bleaching of pulp is done in Pakistan
12 Define cement and write down the raw materials used for manufacturing of cement
13 What is clinker? (taleemcity.com)
   Why cement is called as Portland cement?
14 Describe the composition of good Portland cement.
15 What is the function of Nitrogenous fertilizers for the Growth of plants?

Important Long Questions

1. What are fertilizers? Discuss the classification of fertilizers and their uses. (taleemcity.com)
2. Nitrogenous fertilizer is an important class of fertilizers for crops. Discuss.
3. How urea is manufactured in the industries? Support your answer with chemical equations.
4. Describe the manufacturing process of cement.

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Chapter# 16

Important Short Questions

1. What are Leachates?
2. How detergents are threat to aquatic life.
3. What is acid rain and how it affects the environment? (taleemcity.com)
4. Explain the term BOD? / What is biological oxygen demand?
5. What is acid rain? (taleemcity.com)
6. How chlorofloro-carbons (CFCs) destroy the Ozone layer?
7. Discuss detergents as water pollutants?
8. Write down the effects on human health of CO.
9. What do you know about water pollution? How is water polluted by industrial effluents?
10 Name four components of environment.
11 What are primary and secondary pollutants? Give example of each.
12 What is chemical oxygen demand (COD)? How it is measured?

13 How oil spillage effects the aquatic life on earth. (taleemcity.com)

14 How is water purified by: (i) Aeration (ii) Coagulation

15 What is smog? Under what conditions, smog is formed?

This year, there will be no long from this chapter.

معروضی

معروضی کے لئے ہر سبق کے مشقی معروضی سوالات اور اضافی معروضی لازمی تیار کریں۔ بہترین تیاری کے لئے پاسٹ پیپرز کی معروضی تیار کریں۔

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Note:

- This guess paper consists of the most important questions from exam's point of view.
- This does not mean that the entire paper will come from it.
- These guess papers can help you pass the exam if you didn't prepare well.
- Prepare the complete syllabus along with it if you wish to secure high marks.