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(To be filled in by the candidate)

Chemistry**H.S.S.C (12th) 1st Annual 2023**

Time : 20 Minutes

Paper : II

Group: I

Objective – (i)

Marks : 17

Paper Code

| | | | |
|---|---|---|---|
| 8 | 4 | 8 | 1 |
|---|---|---|---|

SWL-12-1-23

Note: - You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number in your answer book. Use marker or pen to fill the circles. Cutting or filling up two or more circles will result no mark.

SECTION-A

| Q.1 | Questions | A | B | C | D |
|-----|---|---|---|---|--|
| 1. | Which is the correct statement ? | All lanthanides are present in the same group | All halogens are present in the same period | All the alkali metals are present in the same group | All the noble gases are present in the same period |
| 2. | The element cesium bears resemblance with: | Ca | Cr | Cl | None of these |
| 3. | Aluminium oxide is: | Acidic oxide | Basic oxide | Amphoteric oxide | Non-metallic oxide |
| 4. | Laughing gas is chemically: | NO | N ₂ O | NO ₂ | N ₂ O ₄ |
| 5. | Chlorine heptaoxide (Cl ₂ O ₇) reacts with water to form: | Hypochlorous acid | Chloric acid | Perchloric acid | Chlorine and oxygen |
| 6. | The total number of transition elements is: | 10 | 14 | 40 | 68 |
| 7. | Ethers show the phenomenon of: | Position isomerism | Cis-trans isomerism | Metamerism | Functional group isomerism |
| 8. | Vinylacetylene combines with HCl to form: | Polyacetylene | Benzene | Chloroprene | Divinylacetylene |
| 9. | The electrophile in aromatic sulphonation is: | H ₂ SO ₄ | HSO ₄ ⁻ | SO ₃ | SO ₃ ⁺ |
| 10. | S _N 2 reactions can be best carried out with: | Primary alkyl halides | Secondary alkyl halides | Tertiary alkyl halides | Tertiary and primary alkyl halides |
| 11. | Which compound is called universal solvent? | H ₂ O | CH ₃ OH | C ₂ H ₅ OH | CH ₃ OCH ₃ |
| 12. | Which compound will have the maximum repulsion with H ₂ O? | C ₆ H ₆ | C ₂ H ₅ OH | CH ₃ CH ₂ CH ₂ OH | CH ₃ OCH ₃ |
| 13. | Which of the given compound will give iodoform test on treatment with I ₂ /NaOH? | Formaldehyde | Benzaldehyde | 2-butanone | 3-pentanone |
| 14. | Which compound is used as coagulant for latex in rubber industry? | Formic acid | Acetic acid | Benzoic acid | Butanoic acid |
| 15. | Which of these polymers is a natural polymer? | DNA | Polyester | PVC | Rayon fibre |
| 16. | Phosphorous helps the growth of: | Root | Stem | Leaves | Seed |
| 17. | The normal amount of overhead ozone in the atmosphere is about: | 35 DU | 53 DU | 350 DU | 51 DU |

Chemistry**H.S.S.C (12th) 1st Annual 2023**

Time : 2:40 Hours

Paper : II

Group: I

Subjective *SWL-12-1-23*

Marks : 68

Note: Section B is compulsory. Attempt any 3 questions from Section C.**SECTION-B****2. Write short answers to any Eight parts. (8 x 2 = 16)**

- i. Write the chemistry of borax bead test.
- ii. Write two uses of aluminium.
- iii. What is soapstone? Give its uses.
- iv. Which informations are obtained by the X-ray studies of benzene structure?
- v. How will you prepare benzene from sodium benzoate?
- vi. Describe a chemical test for confirmation of toluene.
- vii. What is a terpolymer? Name its monomers.
- viii. Draw the structures of α -D Glucose and β -D Glucose.
- ix. What are derived proteins?
- x. Describe carbon monoxide as a pollutant.
- xi. What are leachates?
- xii. What do you mean by chemical oxygen demand (COD)?

3. Write short answers to any Eight parts. (8 x 2 = 16)

- i. What is Aqua Regia? Give its composition.
- ii. Give two reactions in which HNO_2 acts as oxidizing agent.
- iii. Give any four similarities between sulphur and oxygen.
- iv. What is vital force theory? Who rejected this theory?
- v. Why 2-butene shows the geometric isomerism?
- vi. Why alkanes are non-reactive towards addition reaction?
- vii. Give reaction between HCl and 1-propene. Write the name of rule to be followed.
- viii. What is Raney Nickel? How is it prepared?
- ix. What is excellent method for preparation of alkyl iodides?
- x. Give two rules for IUPAC nomenclature of alkyl halides.
- xi. Why are potassium fertilizers important for plants?
- xii. Write down names of three methods for the production of paper pulp.

4. Write short answers to any Six parts. (6 x 2 = 12)

- i. How is KMnO_4 produced by Stadelers Process?
- ii. Why does damaged tin plated iron get rusted quickly?
- iii. What are substitutional alloys?
- iv. How is ethanol produced from starch?
- v. What is Lucas test?
- vi. How is picric acid produced from phenol?
- vii. Write down the general mechanism for base catalyzed nucleophilic addition reactions of carbonyl compounds.
- viii. Why does formaldehyde not undergo aldol condensation?
- ix. Differentiate between essential and non-essential amino acids.

SECTION-C**Attempt any Three questions. Each Question Carries Eight (8) Marks (8x3=24)**

5. (a) Write down two points of similarities and two points of dissimilarities between hydrogen and alkali metals. 4
- (b) Describe any eight points of peculiar behaviour of lithium. 4
6. (a) What are commercial uses of fluorine, chlorine and their compounds? 4
- (b) How is Urea manufactured in Pakistan? Explain it. 4
7. (a) Explain reforming of petroleum with the help of suitable example. 4
- (b) Detail out two reactions in which benzene behaves as if it is a saturated hydrocarbon and two reactions in which it behaves as unsaturated hydrocarbon. 4
8. (a) What is cyclic polymerization of Alkynes? How will you prepare synthetic rubber from ethyne? 4
- (b) Give the reactions of Ethyl Magnesium Bromide with: 4
- (i) NH_3 (ii) HCHO (iii) CH_3CHO (iv) $\text{CH}_3\text{CH}_2\text{—OH}$
9. (a) What is haloform reaction? Give its importance by any three reactions. 4
- (b) Give the mechanism of formation of amide. Give its overall reaction also. 2+2

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(To be filled in by the candidate)

Chemistry**HSSC (12th) 1st Annual 2023**

Time : 20 Minutes

Paper : II

Group-II

Objective – (iii)

Marks : 17

Paper Code

| | | | |
|---|---|---|---|
| 8 | 4 | 8 | 6 |
|---|---|---|---|

SWL-12-2-23

Note: - You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number in your answer book. Use marker or pen to fill the circles. Cutting or filling up two or more circles will result no mark.

SECTION-A

| Q.1 | Questions | A | B | C | D |
|-----|--|---|--|--|---|
| 1. | Based on thermal properties, plastics are divided into: | Three main classes | Four main classes | Five main classes | Two main classes |
| 2. | Select the one which is neutral amino acid in nature: | Alanine | Histidine | Aspartic acid | Lysine |
| 3. | The oxidation of aldehydes always gives: | Ketones | Carboxylic acids | Esters | Alkanes |
| 4. | Williamson's synthesis is used to prepare: | Alcohols | Aldehydes | Esters | Ethers |
| 5. | Which compound will have the maximum repulsion with H ₂ O? | C ₆ H ₆ | C ₂ H ₅ OH | CH ₃ CH ₂ CH ₂ OH | CH ₃ -O-CH ₃ |
| 6. | Grignard reagent is reactive due to: | The presence of halogen atom | The presence of Mg atom | The polarity of C-Mg bond | None of these |
| 7. | Vinyl acetylene combines with HCl to form: | Polyacetaldehyde | Benzene | Chloroprene | Divinyl acetylene |
| 8. | Which compound is the most reactive one? | Benzene | Ethene | Ethane | Ethyne |
| 9. | A double bond consists of: | Two sigma bonds | One sigma and one Pi bond | One sigma and two Pi bonds | Two Pi bonds |
| 10. | Which of the given is a typical transition metal? | Sc | Y | Ra | Co |
| 11. | Chlorine heptaoxide (Cl ₂ O ₇) reacts with water to form: | Hypochlorous acid | Chloric acid | Perchloric acid | Chlorine and oxygen |
| 12. | Which catalyst is used in contact process? | Fe ₂ O ₃ | V ₂ O ₅ | SO ₃ | Ag ₂ O |
| 13. | Which of the given element is not present abundantly in earth's crust? | Silicon | Aluminium | Sodium | Oxygen |
| 14. | The mineral (CaSO ₄ .2H ₂ O) has the general name: | Gypsum | Dolomite | Calcite | Epsom salt |
| 15. | Which is the correct statement? | Na ⁺ ion is smaller than Na atom | Na ⁺ ion is larger than Na atom | Cl ⁻ ion is smaller than Cl atom | Cl ⁻ ion and Cl atom are equal in size |
| 16. | The normal amount of overhead ozone is about: | 250 DU | 350 DU | 300 DU | 400 DU |
| 17. | Select the percentage of nitrogen in urea: | 82% | 46% | 35% | 100% |

Chemistry**HSSC (12th) 1st Annual 2023**

Time : 2:40 Hours

Paper : II

Group-II

Subjective *SWL/12-2-23* Marks : 68**Note:** Section B is compulsory. Attempt any 3 questions from Section C.**SECTION-B****2. Write short answers to any Eight parts. (8 x 2 = 16)**

- i. What is borax? How is it prepared from boric acid?
- ii. Why is Aluminium foil used to insulate the buildings?
- iii. What is silica? Draw its structure.
- iv. How is benzene prepared in laboratory from soda lime?
- v. What do you mean by orientation in aromatic electrophilic substitution reactions?
- vi. What are objections to the Kekulé structure of benzene?
- vii. What are disaccharides? Give two examples.
- viii. What is denaturing of protein? Give one example.
- ix. How polyamide resins are prepared? Give equation.
- x. What is smog? Name its types.
- xi. Why CO is considered as a poisonous gas?
- xii. What do you mean by recycling of waste? Name two ways to recycle the waste.

3. Write short answers to any Eight parts. (8 x 2 = 16)

- i. How is coal produced? Write its chemical equation as well.
- ii. What is meant by tautomerism?
- iii. How can you distinguish between 1-Butyne and 2-Butyne?
- iv. What is meant by hydration of alkene? Give one example.
- v. Differentiate between Wolf-Kishner's and Clemmensen reduction?
- vi. P_2O_5 is a powerful dehydrating agent. Prove it by two examples.
- vii. HNO_2 acts as oxidizing agent. Prove it with the help of two examples.
- viii. Why does oxygen show -2 oxidation state but sulphur has variable oxidation state?
- ix. Why is R-I more reactive than R-F?
- x. Write down the excellent method for preparation of alkyl iodide?
- xi. Write the %age of any four compounds present in cement?
- xii. What are the requirements for a good fertilizer? (Any four)

4. Write short answers to any Six parts. (6 x 2 = 12)

- i. Write one method for the preparation of $KMnO_4$.
- ii. What will happen when $K_2Cr_2O_7$ reacts with potassium iodide and H_2S ?
- iii. What is the ligand? Give one example.
- iv. Write two reactions of alcohols in which 'C-O' bond is broken.
- v. What is Bakelite? How is it prepared?
- vi. How does ethyl alcohol react with Na and CH_3COOH .
- vii. What is Haloform reaction?
- viii. What is Benedict's solution test?
- ix. Write the chemical equation for the reaction of acetic acid with ethanol.

SECTION-C**Attempt any Three questions. Each question carries Eight (8) marks. (4+4=8)**

5. (a) What are halides? Give classification of halides with periodic trend. 4
- (b) Describe with diagram the manufacture of sodium metal by Down's cell. 4
6. (a) Write down any four points of peculiar behaviour of fluorine. Also write any two commercial uses of 2+2=4
- (i) Fluorine (ii) Chlorine
- (b) Explain various heating zones in the manufacturing of cement. 4
7. (a) Define orbital hybridization. Explain sp hybridization with the structure of ethyne. 4
- (b) What is nitration of Benzene? Give its mechanism. 4
8. (a) How will you bring about the following conversions? 4
- i. Methane to ethane ii. Ethane to methane
- iii. Acetic acid to ethane iv. Methane to nitromethane
- (b) Differentiate between E1 and E2 mechanisms. 4
9. (a) How acetaldehyde is prepared in laboratory by two different methods? 2+2=4
- Show along with labelled diagram.
- (b) What are amino acids? Give their two methods of preparation. 1+3=4