

Roll No. _____ (To be filled in by the candidate)

(Academic Sessions 2019 – 2021 to 2021 – 2023)

CHEMISTRY223-1st Annual-(INTER PART – II)

Time Allowed : 20 Minutes

Q.PAPER – II (Objective Type)

GROUP – I

Maximum Marks : 17

PAPER CODE = 8487 *L14R-12-1-23*

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	Which of these polymers is an addition polymer : (A) Nylon – 6,6 (B) Polystyrene (C) Terylene (D) Epoxy resin
2	Vinyl acetylene combines with HCl to form : (A) Polyacetylene (B) Benzene (C) Chloroprene (D) Divinyl acetylene
3	The anhydride of $HClO_4$ is : (A) ClO_3 (B) ClO_2 (C) Cl_2O_5 (D) Cl_2O_7
4	According to Lewis concept ethers behave as : (A) Acid (B) Base (C) Acid as well as base (D) None of these
5	Benzene can not undergo : (A) Substitution reaction (B) Addition reaction (C) Oxidation reaction (D) Elimination reaction
6	Which of the following sulphate is not soluble in water : (A) Sodium sulphate (B) Potassium sulphate (C) Zinc sulphate (D) Barium sulphate
7	Phenol-formaldehyde resin is called : (A) Bakelite (B) Teflon (C) Orlon (D) Terylene
8	The state of hybridization of carbon atom in methane is : (A) sp^3 (B) sp^2 (C) sp (D) dsp^2
9	Which test is applied to detect amino acids : (A) Fehling's test (B) Iodoform test (C) Ninhydrin test (D) Sodium nitroprusside test
10	The oxides of metals are : (A) Acidic (B) Basic (C) Amphoteric (D) Neutral
11	Which one of the following is not nucleophile : (A) H_2O (B) H_2S (C) BF_3 (D) NH_3
12	Tinical is a mineral of : (A) Al (B) B (C) Si (D) C
13	Which is not a calcareous material : (A) Lime (B) Clay (C) Marble (D) Marine shell
14	The carbon atom of a carboxyl group is : (A) sp - hybridized (B) sp^2 - hybridized (C) sp^3 - hybridized (D) None of these
15	The residence time of NO in atmosphere is : (A) One day (B) Two days (C) Three days (D) Four days
16	A double bond consists of : (A) Two sigma bonds (B) One sigma and one pi bond (C) One sigma and two pi bonds (D) Two pi bonds
17	Laughing gas is chemically : (A) NO (B) N_2O (C) NO_2 (D) N_2O_4

191-223-I-(Objective Type)- 10500 (8487)

Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2019 – 2021 to 2021 – 2023)

CHEMISTRY

223-1st Annual-(INTER PART – II)

Time Allowed : 2.40 hours

PAPER – II (Essay Type)

GROUP – I

Maximum Marks : 68

SECTION – I

LHR-12-1-23

2. Write short answers to any EIGHT (8) questions :

16

- (i) Write down the chemistry of borax bead test.
- (ii) Draw the electronic structure of CO and CO₂.
- (iii) How will you convert boric acid into borax?
- (iv) Convert benzene into glyoxal.
- (v) Mention the product when phenol is distilled with Zn dust by giving reaction.
- (vi) Give two uses of silicones.
- (vii) Define saponification number.
- (viii) How polyvinyl acetate is formed? Write its equation.
- (ix) Draw the structure of cholesterol.
- (x) Write down the equation, when suspended impurities are removed in the colloidal form in raw water.
- (xi) Define acid rain.
- (xii) Mention the hazards of chloroform.

3. Write short answers to any EIGHT (8) questions :

16

- (i) Give the two reactions for the preparation of N₂O.
- (ii) Write down four uses of HNO₃.
- (iii) Give the reactions of H₂SO₄ with : (a) NaCl (b) KNO₃
- (iv) Convert CH₄ into formaldehyde by catalytic oxidation.
- (v) Define Markownikov's rule. Give an example.
- (vi) Prepare ozonide from ethene.
- (vii) Name two main factors which govern reactivity of R-X bond in alkyl halides.
- (viii) Define nucleophile. Give two examples.
- (ix) What is vital force theory?
- (x) What are heterocyclic organic compounds? Give two examples.
- (xi) Write down four essential qualities of a good fertilizer.
- (xii) Write down two chemical reactions involved in the preparation of urea.

4. Write short answers to any SIX (6) questions :

12

- (i) Complete and balance the following chemical equation :
 $KMnO_4 + FeSO_4 + H_2SO_4 \rightarrow$
- (ii) Give systematic names of the following :
(a) K₂[Cu(CN)₄] (b) K₂[PtCl₄]
- (iii) What is meant by "central metal ion"? Explain with one example.
- (iv) How are ethene and diethyl ether produced from ethyl alcohol?
- (v) Explain Lucas test.

(Turn Over)

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(2)

14R-12-1-23

4. (vi) Give reactions of phenol with : (a) Bromine water. (b) Conc. H_2SO_4
(vii) What is Benedict's solution test? Give reaction.
(viii) How does hydrazine react with acetone?
(ix) Write reaction between acetic acid and ammonia for the formation of amide.

SECTION - II

Note : Attempt any **THREE** questions.

5. (a) Define hydration energy. Give its trend in the periodic table. 4
(b) Explain peculiar behaviour of Beryllium. 4
6. (a) What happens when bleaching powder reacts with the following reagents : 1,1,1,1
(i) dil. H_2SO_4 (ii) Excess of conc. H_2SO_4 (iii) NH_3 (iv) CO_2
(b) How is urea manufactured in Pakistan? Describe in detail. 4
7. (a) What is orbital hybridization? Explain the geometry of ethyne by sp hybridization. 4
(b) Explain Friedel-Crafts acylation of benzene along with its mechanism. 4
8. (a) How can ethyne be converted into : (i) Oxalic acid. (ii) Acetaldehyde. 2,2
(b) Discuss S_N1 mechanism for nucleophilic substitution reaction of alkyl halide. 4
9. (a) Discuss the oxidation of ketones and aldehydes in detail. 4
(b) How can you prepare the following from ethanoic acid :
(i) Ethyl alcohol. (ii) Ethane. (iii) Sodium acetate. (iv) Acetic anhydride. 1,1,1,1

No. _____ (To be filled in by the candidate)

(Academic Sessions 2019 – 2021 to 2021 – 2023)

CHEMISTRY

223-1st Annual-(INTER PART – II)

Time Allowed : 20 Minutes

PAPER – II (Objective Type)

GROUP – II

Maximum Marks : 17

PAPER CODE = 8486 LHR-12-2-23

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	Elimination bimolecular reactions involve : (A) First order kinetics (B) Second order kinetics (C) Third order kinetics (D) Zero order kinetics
2	Which one of the following is a typical transition element : (A) Sc (B) Y (C) Zn (D) Co
3	Cannizzaro's reaction is given by : (A) Formaldehyde (B) Acetone (C) Acetaldehyde (D) 3-pentanone
4	Which one of the following does not belong to alkaline earth metals : (A) Be (B) Ra (C) Ba (D) Rn
5	The normal amount of overhead ozone is about : (A) 150 DU (B) 250 DU (C) 350 DU (D) 450 DU
6	Synthetic rubber is made by the polymerization of : (A) Chloroform (B) Acetylene (C) Divinyl acetylene (D) Chloroprene
7	Which catalyst is used in the contact process : (A) Fe_2O_3 (B) V_2O_5 (C) SO_3 (D) Ag_2O
8	Which statement is incorrect : (A) All the metals are good conductor of electricity (B) All the metals are good conductor of heat (C) All the metals form positive ions (D) All the metals form acid oxides
9	Which compound is called a universal solvent : (A) H_2O (B) CH_3OH (C) C_2H_5OH (D) CH_3-O-CH_3
10	Which one is argillaceous material : (A) Clay (B) Lime (C) Marble (D) Marine shell
11	The electrophile in aromatic sulphonation is : (A) H_2SO_4 (B) HSO_4^- (C) SO_3 (D) SO_3^+
12	The anhydride of $HClO_4$ is : (A) ClO_3 (B) Cl_2O_5 (C) ClO_2 (D) Cl_2O_7
13	Which of the following element is present in all amino acids : (A) Br (B) N (C) Cl (D) Cu
14	Ethers show the phenomenon of : (A) Position isomerism (B) Functional group isomerism (C) Metamerism (D) Cis-trans isomerism
15	Aluminium oxide is : (A) Acidic oxide (B) Basic oxide (C) Amphoteric oxide (D) None of these
16	According to Lewis concept ethers behave as : (A) Acid (B) Base (C) Acid as well as a base (D) None of these
17	Alkane nitriles can be converted into carboxylic acids by : (A) Hydration (B) Acid hydrolysis (C) Hydrogenation (D) Oxidation

228-223-II-(Objective Type)- 8500 (8486)

Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2019 – 2021 to 2021 – 2023)

CHEMISTRY

223-1st Annual-(INTER PART – II)

Time Allowed : 2.40 hours

PAPER – II (Essay Type)

GROUP – II

Maximum Marks : 68

SECTION – I

LHR-12-2-3

2. Write short answers to any EIGHT (8) questions :

16

- (i) How does orthoboric acid react with : (a) NaOH (b) C_2H_5OH
- (ii) Why are aluminium sheets said to be free from corrosion?
- (iii) What is water glass? How is it prepared? Give reaction.
- (iv) How is ethyl benzene obtained from bromobenzene? Give reaction.
- (v) How is maleic acid obtained from benzene? Give reaction.
- (vi) Why is nitro group meta-directing?
- (vii) What is meant by addition polymerization? Give an example.
- (viii) Give structures of the monomers of polyvinyl chloride and polystyrene.
- (ix) What is the difference between oligosaccharides and polysaccharides?
- (x) How is quality of raw water improved by aeration process?
- (xi) Why is ozone layer depleting?
- (xii) How is plastic recycled by depolymerization?

3. Write short answers to any EIGHT (8) questions :

16

- (i) What is catalytic cracking? Give its importance.
- (ii) What are alicyclic compounds? Give example.
- (iii) Convert ethyne into acrylonitrile.
- (iv) What are epoxides? How these are prepared from alkene?
- (v) Give nitration reaction of methane.
- (vi) How does conc. H_2SO_4 reacts with "C and S"?
- (vii) Give the effect of heat on H_3PO_4 .
- (viii) What is laughing gas? How is it prepared?
- (ix) Define leaving group. Give some examples.
- (x) Convert C_2H_5MgBr into ethane.
- (xi) What are fertilizers? Why they are needed?
- (xii) Mention raw materials used for cement.

4. Write short answers to any SIX (6) questions :

12

- (i) Define the terms : (a) Coordination sphere. (b) Ligand.
- (ii) Give the systematic names to following complexes :
(a) $[Fe(H_2O)_6]^{2+}$ (b) $Na_3[CoF_6]$
- (iii) What is sacrificial corrosion?
- (iv) How will you distinguish between alcohol and phenol?
- (v) How will you convert methanol into ethanol?

(Turn Over)

L

(2)

CHD-12-2-23

4. (vi) Why ethanol has higher boiling point than diethyl ether?
- (vii) How are ketones oxidized by $K_2Cr_2O_7 / H_2SO_4$?
- (viii) Give the mechanism of addition of HCN to acetone.
- (ix) What is the strecker's synthesis?

SECTION - II

Note : Attempt any THREE questions.

5. (a) Describe the metallic and non-metallic character of elements in the modern periodic table. 4
- (b) How is sodium metal prepared by Down's cell? Explain it. 4
6. (a) Give any four applications of noble gases. 4
- (b) What is setting of cement? Give the reaction taking place in 1st 24 hours. 1,3
7. (a) What is functional group? Give three examples of oxygen containing functional groups. 4
- (b) Explain Friedel-Crafts alkylation of benzene alongwith its mechanism. 4
8. (a) What is polymerization? Describe the linear and cyclic polymerization of alkynes. 1,3
- (b) By using Grignard reagent prepare : (i) Primary alcohol. (ii) Carboxylic acids. 2,2
9. (a) Describe mechanism of reaction of aldehyde (having no α -hydrogen) in which both oxidation and reduction takes place simultaneously. 4
- (b) Write the mechanism of ester formation by using carboxylic acid and ethanol. 4

228-223-II-(Essay Type)-34000

Objective
Paper Code
8483

FBD-12-1-23
Intermediate Part Second - 136
CHEMISTRY (Objective) GROUP - I
Time: 20 Minutes Marks: 17

Roll No. : _____



Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	The main water pollutant chromium-VI is discharged by:	Plastic industry	Paper industry	Leather industry	Cement industry
2	Urea contains:	36% nitrogen	46% nitrogen	56% nitrogen	66% nitrogen
3	Polyamide resins are:	Homopolymer	Copolymer	Terpolymer	Addition polymer
4	Compounds having $-C \equiv N$ group are called:	Nitro compound	Amino acid	Alkane nitriles	Amide
5	During reduction of aldehyde with $NaBH_4$, H^- ion act as:	Electrophile	Nucleophile	Acid	Base
6	Which enzyme is not involved in fermentation of starch?	Diastase	Zymase	Urease	Maltase
7	Carbolic acid has another name of:	Alcohol	Phenol	Ether	Carboxylic acid
8	Which is not a nucleophile?	H_2O	H_2S	BF_3	NH_3
9	The electrophile in aromatic sulphonation is:	H_2SO_4	HSO_4^{-1}	SO_3	SO_3^{+}
10	β - β' -dichloroethyl sulphide is known as:	Mustard gas	Laughing gas	Phosgene gas	Bio gas
11	A double bond consists of:	Two sigma bonds	One sigma and one pi bond	One sigma and two pi bond	Two pi bond
12	The colour of transition metal complexes is due to:	d-d transition of electrons	Ionization	Loss of s-electron	Gain of s-electron
13	Bleaching powder is prepared by passing chlorine over:	Calcium carbonate	Calcium sulphate	Calcium hydroxide	Magnesium hydroxide
14	Catalyst used in contact process is:	Fe_2O_3	V_2O_5	SO_3	Ag_2O
15	The chief ore of aluminum is:	Na_3AlF_6	$Al_2O_3 \cdot 2H_2O$	Al_2O_3	$Al_2O_3 \cdot H_2O$
16	The mineral $CaSO_4 \cdot 2H_2O$ has the general name:	Gypsum	Dolomite	Calcite	Epsom salt
17	Melting point of halogens:	Decrease down the group	Increase down the group	Remains same in group	First increase and then down the group

1211-XII112336-38000

CHEMISTRY (Subjective) GROUP - I

FBD-12-1-23

Time: 02:40 Hours

Marks: 68

SECTION - I

16

2. Write short answers to any EIGHT parts.

- How will you convert boric acid into borax and vice versa?
- Write the chemical formula of these minerals: (a) borax (b) Colemanite
- What are the common properties of group IVA elements? (any four)
- What is Wurtz-fitting reaction?
- How is glyoxal produced from benzene?
- Define aromatic compounds with two examples.
- What is condensation polymerization?
- How can you differentiate between glucose and fructose?
- Write any four uses of lipids?
- What is dissolved oxygen?
- How do CO_2 and SO_2 cause acid rain?
- How do pesticides affect living organism?

16

3. Write short answers to any EIGHT parts.

- Write the functional group of alkanone and alkanolic acid with one example in each case.
- What do you know about functional group isomerism? Give one example.
- Give structural formula of alkene expected to be formed by dehydrohalogenation of 1-chloropentane.
- Starting from ethene prepare ethyne.
- How is acetylene converted into chloroprene?
- How does Grignard reagent react with methanal?
- Starting from ethyl chloride prepare (a) n-butane (b) ethane.
- Write the names of woody raw materials of paper industry.
- What are the four essential qualities of a good fertilizer?
- Write the allotropic forms of phosphorus.
- Write reaction taking place in contact tower for the manufacturing sulphuric acid.
- Write the ring test for the confirmation of nitrate ion in solution.

12

4. Write short answers to any SIX parts.

- What are ligands? Give one example.
- Draw the geometry of PCl_5 .
- What is chromyl chloride test?
- Define fermentation. Give one example.
- What is Lucas Test?
- Why phenol is acidic but alcohol is not?
- Give mechanism of addition of NH_3 with acetone.
- What is iodoform test? Give its use.
- What are amino acids? Give their general formula.

SECTION - II Attempt any THREE questions. Each question carries 08 marks.

- Discuss the position of hydrogen with group I-A elements. 04
 - Write a detailed note on the commercial preparation of sodium by Down's cell. 04
- Write eight applications of noble gases. 04
 - Describe the process of digestion in paper industry. 04
- Explain any four features of organic compounds. 04
 - Explain the structure of benzene on the basis of molecular orbital treatment. 04
- Convert: (i) Ethyne into oxalic acid (ii) Propyne into acetone 02,02
 - What are alkyl halides? How alkyl halides are prepared from alcohol by three different reactions. 01,03
- How does acetaldehyde react with the following reagents? 01,01,01,01
 - $\text{C}_2\text{H}_5\text{MgI}$ (ii) HCN (iii) NaHSO_3 (iv) dil NaOH
 - Discuss two methods of preparation of α -amino acids. 04

1211-XII123-38000

f-80-12-2-23

Roll No. : _____

Objective
Paper Code

Intermediate Part Second - 301

CHEMISTRY (Objective) GROUP - II

8486

Time: 20 Minutes

Marks: 17



Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	Formula of chloroform is:	CH ₃ Cl	CCl ₄	CH ₂ Cl ₂	CHCl ₃
2	Linear shape is associated with which set of hybrid orbitals?	sp	sp ²	sp ³	dsp ²
3	Group VI-B of transition elements contains:	Zn, Cd, Hg	Fe, Ru, Os	Cr, Mo, W	Mn, Te, Re
4	Which one of these hydrogen halides is the weakest acid in solution?	HF	HBr	HI	HCl
5	One of the catalyst used in contact process:	Fe ₂ O ₃	V ₂ O ₅	SO ₃	Ag ₂ O
6	The chief ore of aluminum is:	Na ₃ AlF ₆	Al ₂ O ₃ · 2H ₂ O	Al ₂ O ₃	Al ₂ O ₃ · H ₂ O
7	The oxide of beryllium is:	Acidic	Basic	Amphoteric	Composite
8	Keeping in view the size of atoms, which order is the correct one?	Mg > Sr	Ba > Mg	Lu > Ce	Cl > I
9	The normal amount of overhead ozone is about:	350 DU	250 DU	150 DU	50 DU
10	Percentage composition of silica in cement is:	62	22	7.5	2.5
11	Succinic thiokinase is an example of:	Ligases	Lyases	Hydrolases	Isomerases
12	Flavour of amyl butyrate (Ester) is:	Orange	Apricot	Jasmine	Banana
13	The colour of precipitate of aldehyde with Fehling's solution is:	Black	White	Blue	Brick red
14	Rectified spirit contains ethyl alcohol about:	80%	85%	90%	95%
15	Ethanol can be converted into ethanoic acid by:	Hydrogenation	Hydration	Oxidation	Fermentation
16	Which is not a nucleophile?	H ₂ O	H ₂ S	BF ₃	NH ₃
17	The electrophile in aromatic sulphonation is:	H ₂ SO ₄	HSO ₄ ⁻	SO ₃	SO ₃ ⁺

1212-XII132031-5000

CHEMISTRY (Subjective) GROUP - II

F30-12-2-23

Time: 02:40 Hours

Marks: 68

SECTION - I**2. Write short answers to any EIGHT parts.**

16

- (i) Why CO_2 is gas but SiO_2 is a solid?
- (ii) Write four uses of borax.
- (iii) What is meant by chemical garden?
- (iv) Prepare glyoxal from benzene.
- (v) Give the structural formulae of (a) Benzoic acid (b) Acetophenone
- (vi) Write objections to Kekule formula of benzene.
- (vii) What are thermoplastic polymers? Give two examples.
- (viii) Give two points of difference between RNA and DNA.
- (ix) How is PVC prepared? Give its uses.
- (x) What are primary and secondary pollutants?
- (xi) How is water pollution caused by the detergents?
- (xii) What is dissolved oxygen?

3. Write short answers to any EIGHT parts.

16

- (i) Explain reforming of petroleum with the help of a suitable example.
- (ii) Define functional group. Give two examples of oxygen containing functional groups.
- (iii) Write structural formulae of these compounds: (a) 2,5-heptadiene (b) 1,3-pentadiene
- (iv) How can you chemically distinguish between propene and propyne?
- (v) Write the structural formula of the product formed when 1-butene reacts with Br_2 in CCl_4 .
- (vi) Give reactions of HNO_3 with reducing agents (a) FeSO_4 (b) H_2S
- (vii) How does concentrated H_2SO_4 react with (a) Copper (b) Ag. Give reactions.
- (viii) How does NO react with H_2S and H_2SO_3 ?
- (ix) Write reaction of ethyl magnesium chloride with cyanogen chloride.
- (x) Give preparation of Grignard reagent in the presence of dry ether.
- (xi) How is potassium nitrate prepared on industrial scale?
- (xii) What products are formed in the pre-heating zone and decomposition zone of rotary kiln in cement industry?

4. Write short answers to any SIX parts.

12

- (i) KMnO_4 acts as oxidizing agents. Give reaction.
- (ii) Why does damaged tin plated iron get rusted quickly?
- (iii) Under what conditions does aluminium corrode?
- (iv) Give IUPAC names: (i) $\begin{array}{c} \text{H}_2\text{C}-\text{CH}_2 \\ | \quad | \\ \text{HO} \quad \text{OH} \end{array}$ (ii) $\begin{array}{c} \text{OH} \\ | \\ \text{CH}_3-\text{CH}-\text{COOH} \end{array}$
- (v) Why and how alcohol is denatured?
- (vi) How are ethers prepared by Williamson's synthesis?
- (vii) How will you distinguish between methanal and ethanal by chemical reaction?
- (viii) Give reaction of HCHO with NaBH_4
- (ix) What is ninhydrin test?

SECTION - II Attempt any THREE questions. Each question carries 08 marks.

5. (a) What are oxides? Discuss their classification on the basis of acidic and basic character. 01,03
(b) What is the role of gypsum in industry? 04
6. (a) Write any eight applications of noble gases. 04
(b) What is neutral sulphite semi-chemical process? Explain its bleaching unit. 04
7. (a) What is cracking? Discuss its types. 01,03
(b) Discuss Friedel-Crafts alkylation reaction of benzene with mechanism. 04
8. (a) Write any four methods for preparation of alkanes. 04
(b) Write any four methods for preparation of alkyl halides from alcohols. 04
9. (a) Starting from aldehyde prepare: (i) Oxime (ii) Hydrazone (iii) Iodoform (iv) Cyanohydrin 04
(b) What types of reactions are shown by carboxylic acids? Describe any three reactions involving hydrogen atom of carboxylic acid group. 04

1212-XII123-5000



Roll No. _____ to be filled in by the candidate

(For All Sessions)

Time: 20 Minutes

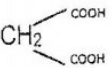
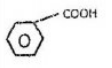
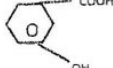
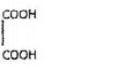
CHEMISTRY (Objective)

(GROUP - I)

Rwp-12-1-23

Marks: 17

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A, B, C & D to each question are given. Which answer you consider correct, fill the corresponding circle A, B, C or D given in front of each question with marker or pen ink on the answer sheet provided.

- 1.1. Nylon-6,6 is replaced by the reaction of hexamethylene diamine and _____ acid :
 (A) Methanoic (B) Acetic (C) Adipic (D) Benzoic
2. Micronutrients required for plant growth is in the range of _____ per acre.
 (A) 5 Kg to 200 Kg (B) 6 Kg to 200 Kg (C) 6 Kg to 250 Kg (D) 7 Kg to 250 Kg
3. The yellow colour in photochemical smog is due to :
 (A) NO (B) NO₂ (C) N₂O (D) N₂O₅
4. Mendeleev in his periodic table arranged the elements according to their :
 (A) Atomic number (B) Atomic mass (C) Proton number (D) None of these
5. Which one of the following does not belong to alkaline earth metals :
 (A) Be (B) Ra (C) Ba (D) Rn
6. Chemical formula for colemanite is :
 (A) Ca₂B₆O₁₁ · 5H₂O (B) CaB₄O₇ · 4H₂O (C) Na₂B₄O₇ · 4H₂O (D) CaNaBO₂
7. Oxidation of NO in air produces :
 (A) N₂O (B) N₂O₃ (C) N₂O₄ (D) N₂O₅
8. Correct electronic configuration of zero group elements is :
 (A) S²P² (B) S²P⁴ (C) S²P⁵ (D) S²P⁶
9. f-block elements are also called _____ transition elements.
 (A) Non-typical (B) Outer (C) Normal (D) Inner
10. The state of Hybridization in methane is :
 (A) Sp (B) Sp² (C) Sp³ (D) Sp⁴
11. Chemical formula of chloroform is :
 (A) CH₃Cl (B) CCl₄ (C) CH₂Cl₂ (D) CHCl₃
12. Which of the following acid acts as catalyst in Friedel-Crafts reactions.
 (A) AlCl₃ (B) HNO₃ (C) BeCl₂ (D) NaCl
13. Grignard reagent is reactive due to presence of _____.
 (A) Halogen atom (B) Mg-atom (C) Polarity of C-Mg bond (D) Carbon atom
14. Ethanol can be converted into ethanoic acid by :
 (A) Hydrogenation (B) Hydration (C) Oxidation (D) Fermentation
15. Which enzymes are involved in the fermentation of starch?
 (A) Urease (B) Maltase (C) Diastase (D) Both (B) & (C)
16. Aldehyde and small methyl Ketones give _____ test :
 (A) Fehling solution (B) Silver mirror (C) Benedict's solution (D) Sodium Bisulphite
17. Formula for oxalic acid :
 (A)  (B)  (C)  (D) 

633-12-A-

Chemistry (Subjective)

(For All Sessions)

(GROUP-I)

Lwp-12-1-23

Time: 2:40 Hours

Section-I

Marks:68

2- Write short answers of any eight parts from the following:

(2 x 8 = 16)

- i. Why is CO_2 a gas while SiO_2 is a solid at room temperature?
- ii. What is chemical Garden?
- iii. How does borax ionize in water?
- iv. How can you prepare the m-chloronitrobenzene in two steps from benzene?
- v. Differentiate between isolated and fused aromatic hydrocarbon?
- vi. Write down the structures of following compounds:
a) Benzoic Acid b) Benzaldehyde
- vii. Differentiate between thermosetting and thermoplastic polymers.
- viii. What is saponification number?
- ix. Discuss the effect of temperature on enzymes.
- x. What is Chemical Oxygen Demand (COD)?
- xi. How is oil spillage affecting the marine life?
- xii. Write down the human activities which lead to produce SO_x .

3- Write short answers of any eight parts from the following:

(2 x 8 = 16)

- i. Write the functional group with example of alkanal and alkanol.
- ii. What do you know about position isomerism?
- iii. How will you bring out the following conversions?
(a) Acetic acid to ethane (b) Methane to nitro methane
- iv. Starting from ethene prepare:
(i) Ethane (ii) Ethylene glycol
- v. Give the reactivity order of alkane, alkene and alkyne.
- vi. How does Grignard reagent react with CO_2 ?
- vii. Write two methods for the preparation of alkyl halides from alcohols.
- viii. Write the names of any four non woody raw material used in paper industry.
- ix. What are the macro nutrients?
- x. Write any four similarities of oxygen with sulphur.
- xi. Why does aqua regia dissolve gold?
- xii. P_2O_5 is powerful dehydrating agent. Prove by giving two examples.

4- Write short answers of any six parts from the following:

(2 x 6 = 12)

- i. Under what conditions does Al corrode?
- ii. What is central metal atom?
- iii. What is coordination sphere?
- iv. How is phenol prepared from chlorobenzene?
- v. How will you distinguish between methanol and ethanol?
- vi. How is benzene prepared from phenol?
- vii. Give general mechanism of base catalysed addition reaction of carbonyl compounds.
- viii. What is fehling solution test?
- ix. How is Acetamide prepared from acetic acid?

Section- II

(8 x 3 = 24)

NOTE : Answer any three questions from the following:

- 5.(a) Discuss the position of Hydrogen with Group IV-A elements.
- (b) Write down commercial preparation of sodium by Down's cell. (4+4)
- 6.(a) Describe Backmann's method for the preparation of Bleaching powder.
- (b) What is setting of cement? Discuss the reactions taking place between 1 – 7 days. (4+4)
- 7.(a) Describe two important sources of organic compounds.
- (b) What is meant by electrophilic substitution reaction? Explain Friedel-crafts alkylation with mechanism. (2+2+1+3)
- 8.(a) Prepare alkanes from:
i) alkyl halides (Two methods)
ii) Kolbe's electrolysis with mechanism
- (b) Explain the mechanism of E1 reaction in detail. (2+2+4)
- 9.(a) Describe with mechanism of aldol condensation reaction. Why does formaldehyde not give this reaction.
- (b) Write down the mechanism of reaction between acetic acid and ethanol. (3+1+4)

634-12-A-

Chemistry (Objective)

(Group-III)

Rwp-12-2-23

Note: Write Answers to the Questions on the objective answer sheet provided. Four possible answers A, B, C and D to each question are given. Which answer you consider correct, fill the corresponding circle A, B, C or D given in front of each question with Marker or Pen ink on the answer sheet provided.

1.1. Which compound is the most reactive one?

- (A) Benzene (B) Ethane (C) Ethene (D) Ethyne

2. Grignard's reagent produce alkane by reacting with all except:

- (A) H_2O (B) NH_3 (C) $HCHO$ (D) C_2H_5OH

3. Which enzyme is involved in fermentation of starch?

- (A) Diastase (B) Zymase (C) Urease (D) Maltase

4. Which alcohol upon oxidation gives acetone?

- (A) 2-propanol (B) 2-methyl-2-propanol (C) Methanol (D) Ethanol

5. Which of the following compound will react with tollen's reagents?

- (A) $\begin{array}{c} O \\ || \\ CH_3 - C - H \end{array}$ (B) $\begin{array}{c} O \\ || \\ CH_3 - C - CH_3 \end{array}$ (C) $\begin{array}{c} O \\ || \\ CH_3 - C - OH \end{array}$ (D) $\begin{array}{c} O \\ || \\ CH_3 - C - CH_2 - CH_3 \end{array}$

6. Which reagent is used to reduce acetic acid to ethyl alcohol?

- (A) H_2/Ni (B) H_2/Pt (C) $NaBH_4$ (D) $LiAlH_4$

7. The rate of reaction is directly proportional to which concentration of enzyme?

- (A) $[Enzyme]^2$ (B) $\sqrt{[Enzyme]}$ (C) $[Enzyme]$ (D) $[Enzyme]^3$

8. Phosphorus helps in the growth of:

- (A) Root (B) Leave (C) Stem (D) Seed

9. To avoid the formation of toxic compounds with chlorine which substance is used for disinfecting water:

- (A) Ozone (B) Alums (C) Chloramines (D) $KMnO_4$

10. Pick the element having least ionization energy value:

- (A) Nitrogen (B) Oxygen (C) Fluorine (D) Neon

11. When gypsum ($CaSO_4 \cdot 2H_2O$) is heated too strongly, it gives:

- (A) Plaster of Paris (B) Dead burnt (C) Does not affect (D) SO_2 gas

12. Tincal is a mineral of:

- (A) Al (B) B (C) Si (D) C

13. Which catalyst is used in contact process?

- (A) Ag_2O (B) Fe_2O_3 (C) SO_3 (D) V_2O_5

14. The anhydride of $HClO_4$ is:

- (A) Cl_2O_7 (B) Cl_2O_5 (C) Cl_2O_3 (D) ClO_2

15. Bidentate ligand is:

- (A) Hydroxo (B) Cyano (C) Oxalato (D) Ammine

16. The phenomenon of isomerism occurs among ethers is:

- (A) Chain isomerism (B) Position isomerism (C) Functional group isomerism (D) Metamerism

17. The catalyst used for the conversion of acetone into propane is:

- (A) $N_2H_4/KOH/200^\circ C$ (B) $Pd(BaSO_4)/Quinoline$ (C) $Na/Liq. NH_3 - 33^\circ C$ (D) $Zn - Hg/HCl$

Chemistry (Subjective)

(For All Sessions)

Marks : 68

Rwp-12-2-23

(GROUP-II)

SECTION-I

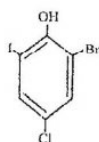
Time: 2:40 hours

2. Write short answers of any eight parts from the following:

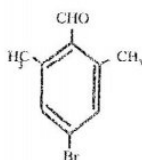
(8x2=16)

- How does Orthoboric acid react with: a) NaOH b) Ethylalcohol
- Why are silicones preferred over ordinary organic lubricants?
- What is water glass? Give its two uses.
- Write IUPAC names of the following molecules:

a)



b)



v. What happens when?

a) Benzene is burnt in free supply of air

b) Chlorine is passed through benzene in sunlight.

- Give the two characteristics of aromatic hydrocarbons.
- Draw the cyclic structure of glucose and fructose.
- How suspended impurities can be coagulated from water with alum?
- What is COD? How is it measured?
- What is addition polymerization? Give example.
- What is the chemical composition of fats and oils?
- What are conditions for formation of smog?

3. Write short answers of any eight parts from the following:

(8x2=16)

- Describe any two features of organic compound.
- How is octane number of gasoline improved?
- Write common names of $H_2C = CH_2$ and $H_3C - CH = CH_2$
- What is Sabatier-Senderen's reaction? Give an example.
- How will you convert methane into ethane?
- Write down four similarities between oxygen & sulphur.
- NO_2 is a strong oxidizing agent. Prove it by two reactions.
- Write four dissimilarities between oxygen and sulphur.
- Prepare two anti-knocking agents which are used in gasoline.
- Write a reaction of CH_3CH_2MgBr with ethylene epoxide.
- Define cement. Name its two calcareous raw materials.
- Mention four essential qualities of a good fertilizer.

4. Write short answers of any six parts from the following:

(6x2=12)

- Why are d & f block elements called transition elements?
- What is d-d transition?
- What are diamagnetic substances? Give one example.
- Write down structural formula for lactic acid & tartaric acid.
- What is Williamson's synthesis?
- Give one confirmatory test for phenol.
- How is propanone prepared by dry distillation method?
- How is acetic acid reduced by $LiAlH_4$?
- How will you differentiate between methanal and ethanal by iodoform test?

SECTION-II

Note Attempt any three questions. Each question carries equal marks:

(8x3=24)

- Write down the similarities and dissimilarities of hydrogen with group IVA elements.
 - How is sodium metal produced by Dow's cell?
- What are the halogens? On what factors oxidizing power of halogen depends? Give their order of oxidizing power.
 - How is urea manufactured? Describe in detail.
- Explain geometric isomerism and also discuss necessary condition to exhibit geometric isomerism.
 - Explain stability of benzene with the help of resonance energy.
- Explain Kolbe's electrolytic method for the preparation of ethyne along with mechanism.
 - Write a detail note on nucleophilic substitution bimolecular (S_N2) reactions.
- Write down eight uses of formaldehyde.
 - Give the mechanism of reaction between acetic acid and thionyl chloride.



Chemistry	(C)	L.K.No. 1071	Paper Code No. 8485
Paper II	(Objective Type)	Ist - A - Exam - 2023	(Group Ist)
Time :	20 Minutes	Inter (Part II)	
Marks :	17	Session (2019 - 21) to (2021 - 23)	

Note : Four possible choices A, B, C, D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Bup-12-1-23

Q.No.1	Tincal is a Mineral of :	(A) Al (B) B (C) Si (D) C
(1)		
(2)	Chile Saltpetre has the Chemical Formula :	(A) NaNO_3 (B) KNO_3 (C) $\text{Na}_2\text{B}_4\text{O}_7$ (D) $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$
(3)	Mark the Correct Statement :	(A) All Lanthanides are present in the same group (B) All Halogens are present in the same period (C) All the Alkali Metals are present in the same group (D) All the noble gases are present in the same period
(4)	Oxidation of NO in air produces :	(A) N_2O (B) N_2O_3 (C) N_2O_4 (D) N_2O_5
(5)	Linear Shape is associated with which set of Hybrid Orbitals :	(A) sp (B) sp^2 (C) sp^3 (D) dsp^2
(6)	The strength of binding energy of transition elements depends upon :	(A) Number of Electron pairs (B) Number of Unpaired Electrons (C) Number of Neutrons (D) Number of Protons
(7)	Which Halogen occurs naturally in a positive Oxidation state :	(A) Fluorine (B) Chlorine (C) Bromine (D) Iodine
(8)	Preparation of Vegetable Ghee involves :	(A) Halogenation (B) Hydrogenation (C) Hydroxylation (D) Dehydrogenation
(9)	Methyl Alcohol is not used :	(A) As a Solvent (B) As an Anti-freezing Agent (C) As a substitute for Petrol (D) For Denaturing of Ethyl Alcohol
(10)	Elimination Bimolecular reactions involve :	(A) First Order Kinetics (B) Second Order Kinetics (C) Third Order Kinetics (D) Zero Order Kinetics
(11)	The Electrophile in Aromatic Sulphonation is :	(A) H_2SO_4 (B) HSO_4^- (C) SO_3 (D) SO_3^+
(12)	The other name of Phenol is :	(A) Carbonic Acid (B) Carboic Acid (C) Carboxylic Acid (D) Adipic Acid
(13)	Select the Monomers of Nylon - 6, 6 :	(A) Adipic Acid and Ethylene Glycol (B) Acetic Acid and Hexamethylene Diamine (C) Adipic Acid and Hexamethylene Diamine (D) Acetic Acid and Ethylene Glycol
(14)	Ozone Layer is present in which region of Atmosphere :	(A) Troposphere (B) Stratosphere (C) Thermosphere (D) Ionosphere
(15)	Which One will not give Silver Mirror Test :	(A) Formaldehyde (B) Acetaldehyde (C) Acetone (D) Propionaldehyde
(16)	Ammonia contains how much percentage of Nitrogen :	(A) 50 % (B) 82 % (C) 46 % (D) 100 %
(17)	The number of Peptide Bonds in a Dipeptide is :	(A) 1 (B) 2 (C) 3 (D) 4





Roll No.	1071 - 18000	Inter (Part II)	Session (2019 - 21) to (2021 - 23)
Chemistry (Subjective)	Ist - A - Exam 2023	Group Ist	Time 2 : 40 Hours Marks : 68

Note: It is compulsory to attempt any (8 - 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part - II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary.

Part - I

Bwp-12-1-23

22 x 2 = 44

Q.No.2	(i)	Write any two points in which Boron is different from its family members.
	(ii)	Why is Increase in Atomic Size not regular in case of Group III - A elements?
	(iii)	What are Silicones? Give their any two properties.
	(iv)	What are Fused Membered Polycyclic Compounds? Draw structure of two compounds.
	(v)	What do you mean by Side Chain Oxidation of Toluene?
	(vi)	How did Kekule support his theory about structure of Benzene? Give any two points.
	(vii)	What are Thermoplastic Polymers? Give one example.
	(viii)	What are Polysaccharides? Give two examples.
	(ix)	What is Saponification Number? Give one example.
	(x)	Which human activities are responsible for the release of Hydrocarbons in air?
	(xi)	How do the Detergents cause the Water Pollution?
	(xii)	How is Acid Rain harmful for Aquatic Animals?
Q.No.3	(i)	What is meant by Hybridization?
	(ii)	Write down the structures of Isomers having Molecular Formula C_4H_{10} .
	(iii)	How is Ethyne Polymerized to Neoprene?
	(iv)	How can you differentiate between Saturated and Unsaturated Hydrocarbons?
	(v)	How is Ethane produced from Ethyl Magnesium Bromide?
	(vi)	Why is SO_3 dissolved in H_2SO_4 and not in water?
	(vii)	Write down the reaction of Cu with : (a) dil. HNO_3 (b) Conc. HNO_3
	(viii)	How is H_3PO_3 produced from PCl_5 ?
	(ix)	Write any two methods for the preparation of Alkyl Halides from Alcohol.
	(x)	Write down the reaction of Ammonia with Ethyl Bromide.
	(xi)	What are Essential Qualities for a Good Fertilizer? (Any Four)
	(xii)	Write down any four Non - Woody Raw Materials for Paper Manufacturing.
Q.No.4	(i)	Define Paramagnetism and Diamagnetism.
	(ii)	What will happen when $KMnO_4$ reacts with : (a) Oxalic Acid (b) KOH
	(iii)	What are the Substitutional Alloys?
	(iv)	How can we distinguish between Ethanol and Methanol?
	(v)	What will happen when Diethyl Ether react with HI?
	(vi)	Write structural formula of Glycol and Glycerol.
	(vii)	What product would you obtain when Acetaldehyde reacts with 2,4 - DNPH?
	(viii)	Write the Silver Mirror Test.
	(ix)	Write down reaction of Acetic Acid with : (a) Thionyl Chloride (b) PCl_5

Part - II

3 x 8 = 24

Q.No.5	(a)	Explain the position of Hydrogen in I - A and VII - A Groups.	(4)
	(b)	What is the role of Gypsum in Agriculture?	(4)
Q.No.6	(a)	Discuss the Beckmann's Method for the preparation of Bleaching Powder.	(4)
	(b)	Write down the Bleaching Step involved in the manufacturing of Paper Process.	(4)
Q.No.7	(a)	Why there is no free rotation around a double bond and a free rotation around a single bond? Discuss Cis - trans Isomerism.	(4)
	(b)	What happens when : (a) Benzene is heated with Conc. H_2SO_4 at $250^\circ C$. (b) Chlorine is passed through Benzene in Sunlight. (c) A mixture of Benzene vapours and air are passed over heated Vanadium Pentoxide. (d) Benzene is burnt in free supply of Air.	(4)
Q.No.8	(a)	How will you Synthesize the following compounds starting from Ethyne : (a) Benzene (b) Ethane (c) Oxalic Acid (d) Methyl Cyanide	(4)
	(b)	Discuss S_N1 reactions in detail.	(4)
Q.No.9	(a)	How Carbonyl Compounds are reduced by $NaBH_4$? Give the Mechanism also.	(4)
	(b)	How will you prepare Carboxylic Acids from : (i) Hydrolysis of Esters (ii) Oxidative Cleavage of Alkenes (iii) Alkane Nitrile (iv) Alcohols	(4)



Chemistry	(B)	L.K.No. 1072	Paper Code No. 8484
Paper II	(Objective Type)	Ist - A - Exam - 2023	(Group 2 nd)
Time :	20 Minutes	Inter (Part II)	
Marks :	17	Session (2019 - 21) to (2021 - 23)	

Note : Four possible choices A, B, C, D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Bwp-12-2-23

Q.No.1	Ethanol can be converted into Ethanoic Acid by :
(1)	(A) Hydrogenation (B) Hydration (C) Oxidation (D) Fermentation
(2)	Which One is most Toxic : (A) CO ₂ (B) CO (C) O ₂ (D) CH ₄
(3)	Which Woody Raw Material is used for the manufacture of Paper Pulp : (A) Eucalyptus (B) Bagasse (C) Wheat Straw (D) Bamboo
(4)	Which of these Polymers is a Condensation Polymer : (A) nylon - 6, 6 (B) Polystyrene (C) Polyethylene (D) Polyvinylchloride
(5)	Acetic Acid contains : (A) A Hydroxyl Group (B) A Carboxyl Group (C) A Hydroxyl and Carboxyl Group (D) A Carboxyl and an Aldehydic Group
(6)	The Carbon Atom of a Formaldehyde is : (A) sp - Hybridized (B) sp ² - Hybridized (C) sp ³ - Hybridized (D) dsp ² - Hybridized
(7)	Which Enzyme is not involved in fermentation of Starch : (A) Diastase (B) Zymase (C) Urease (D) Maltose
(8)	Grignard Reagent is reactive due to : (A) The presence of Halogen Atom (B) The presence of Mg atom (C) The polarity of C - Mg bond (D) None of these
(9)	The conversion of n - hexane into Benzene by heating in the presence of Pt is called : (A) Isomerization (B) Aromatization (C) Dealkylation (D) Rearrangement
(10)	Preparation of Vegetable Ghee involves : (A) Halogenation (B) Hydrogenation (C) Hydroxylation (D) Dehydrogenation
(11)	The Linear Shape is associated with which set of Hybrid Orbitals : (A) sp (B) sp ² (C) sp ³ (D) dsp ²
(12)	f - block elements are also called : (A) Non Typical Transition Elements (B) Outer Transition Elements (C) Normal Transition Elements (D) Inner Transition Elements
(13)	Hydrogen Bond is the strongest between the Molecules of : (A) HF (B) HCl (C) HBr (D) HI
(14)	Oxidation of NO in air produces : (A) N ₂ O (B) N ₂ O ₃ (C) N ₂ O ₄ (D) N ₂ O ₅
(15)	Which of the following elements is not present abundantly in Earth's Crust : (A) Silicon (B) Aluminium (C) Sodium (D) Oxygen
(16)	The number of Elements classified by Newlands in the Periodic Table are : (A) 38 (B) 62 (C) 92 (D) 85
(17)	Oxides of Beryllium are : (A) Acidic (B) Basic (C) Amphoteric (D) Neutral



Roll No.	1072 - 16000	Inter (Part II)	Session (2019 - 21) to (2021 - 23)
Chemistry (Subjective)	1st - A - Exam 2023	Group 2nd	Time 2 : 40 Hours Marks : 68

Note: It is compulsory to attempt any (8 - 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part - II. Write same Question No. and Its Part No. as given in the Question Paper.

Make Diagram where necessary.

Part - I

BWP-12-2-23

22 x 2 = 44

Q.No.2	(i)	How will you convert Boric Acid into Borax and Vice Versa ?
	(ii)	Why is CO_2 a gas at room temperature while SiO_2 is a Solid ?
	(iii)	What are Semiconductors ? Give two examples.
	(iv)	Write two Electrophilic Substitution Reactions of Benzene.
	(v)	Prepare Benzene from Acetylene.
	(vi)	Draw the resonance structures of Benzene.
	(vii)	Differentiate between Thermoplastic and Thermosetting Polymers.
	(viii)	Write structures of Monomers of Epoxy Resins.
	(ix)	How are Proteins classified based on their functions ?
	(x)	Describe Hazards of Ozone as a Pollutant.
	(xi)	What do you mean by Biochemical Oxygen Demand (BOD) ?
	(xii)	Write the two harmful effects of Chlorination of Water.
Q.No.3	(i)	Write down names and formulas of any two Ores of Sulphur.
	(ii)	How is H_2SO_4 used to Dehydrate the Oxalic Acid and Glucose ?
	(iii)	How does Aqua Regia dissolve gold in it ?
	(iv)	What is Reforming ? Give its chemical equation.
	(v)	What are Alicyclic Compounds ? Draw structure of two compounds.
	(vi)	What is Markownikov's Rule ? Give one example.
	(vii)	Why are Alkenes more reactive than Alkanes ?
	(viii)	How will you prepare Chloroprene from Ethyne ?
	(ix)	Give two methods for preparation of Alkylhalides from Alcohol.
	(x)	What are $\text{S}_{\text{N}}2$ Reactions ? Give one example.
	(xi)	How is Diammonium Phosphate prepared ?
	(xii)	Write down names of any four Non - Woody Raw Materials for Paper.
Q.No.4	(i)	Under what conditions does Aluminium Corrode ?
	(ii)	What is meant by Chelates ?
	(iii)	Why are Transition Metals tough ?
	(iv)	How can we distinguish Ethanol and Methanol ?
	(v)	What is meant by Denaturing of Alcohol ?
	(vi)	How is Phenyl Acetate produced from Phenol ?
	(vii)	Write down any four uses of Acetaldehyde.
	(viii)	How can you distinguish Carbonyl Compounds from Non - Carbonyl Compounds ?
	(ix)	What is Zwitter Ion ?

Part - II

3 x 8 = 24

Q.No.5	(a)	What are the Halides ? Write Its types. Describe one of them in detail.	(4)
	(b)	What will happen when : (i) Lime is heated with coke (ii) Calcium Nitrate is heated (iii) Gypsum is heated (iv) Beryllium Oxide is treated with NaOH	(4)
Q.No.6	(a)	Explain Peculiar Behaviour of Fluorine.	(4)
	(b)	What is Role of Digestion Step in the manufacture of Paper Pulp ?	(4)
Q.No.7	(a)	Define sp^3 Hybridization. Explain formation of Ethane Molecule according to this approach.	(4)
	(b)	Describe the structure of Benzene on the basis of Atomic Orbital Treatment.	(4)
Q.No.8	(a)	Write down the mechanism of Kolbe's Electrolytic Method for the preparation of Ethane.	(4)
	(b)	Discuss $\text{S}_{\text{N}}1$ reactions in detail.	(4)
Q.No.9	(a)	What is Haloform Reaction ? How will you prepare Iodoform from : (a) Acetaldehyde (b) Acetone (c) Ethanol	(4)
	(b)	Write Mechanism for the formation of Ethyl Acetate from Ethyl Alcohol and	(4)

CHEMISTRY

GROUP : FIRST

OBJECTIVE

TIME: 20 MINUTES

MARKS: 17

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. Use marker or pen to fill the Circle. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

DGK-12-1-23

- 1 Keeping in view the size of atoms, which order is the correct one?
(A) $Mg > Sr$ (B) $Ba > Mg$ (C) $Lu > Ce$ (D) $Cl > I$
- 2 Which one of the following does not belong to alkaline - earth metals?
(A) Be (B) Ra (C) Ba (D) Rn
- 3 Which element forms an ion with charge +3?
(A) Beryllium (B) Aluminium (C) Carbon (D) Silicon
- 4 Laughing gas is chemically.
(A) NO (B) N_2O (C) NO_2 (D) N_2O_4
- 5 Which of the following hydrogen halide is the weakest acid in solution?
(A) HF (B) HBr (C) HI (D) HCl
- 6 Total number of transition elements are
(A) 10 (B) 14 (C) 40 (D) 68
- 7 A double bond consists of
(A) Two sigma bonds (B) One sigma and one pi bond
(C) One sigma and two pi bonds (D) Two pi bonds
- 8 Synthetic rubber is made by polymerization of
(A) Chloroform (B) Acetylene (C) Divinylacetylene (D) Chloroprene
- 9 Aromatic hydrocarbons are the derivatives of
(A) Normal series of paraffins (B) Alkene (C) Benzene (D) Cyclohexane
- 10 In primary alkyl halides, the halogen atom is attached to a carbon which is further attached to how many carbon atoms.
(A) Two (B) Three (C) One (D) Four
- 11 Ethanol can be converted into ethanoic acid by
(A) Hydrogenation (B) Hydration (C) Oxidation (D) Fermentation
- 12 Which test is given by Formaldehyde with Tollen's reagent ?
(A) Silver Mirror Test (B) Sodium Bisulphite Test
(C) 2, 4 - DNPH Test (D) Bromine water Test
- 13 Primary, Secondary and tertiary alcohols can be identified by test.
(A) Bromine water Test (B) Lucas Test (C) Silver mirror Test (D) 2, 4 - DNPH Test
- 14 Amino acids react with ninhydrin to form intensely coloured product.
(A) Reddish green (B) Bluish violet (C) Yellowish (D) Pinkish
- 15 Nylon is polyamide made by hexamethylene diamine with.
(A) Adipic acid (B) Picric Acid (C) Oxalic Acid (D) Acetic Acid
- 16 Urea is high quality
(A) Potassium fertilizers (B) Phosphatic fertilizers
(C) Nitrogenous fertilizers (D) Calcareous fertilizers
- 17 Ozone is a gas having oxygen atom.
(A) Three (B) Two (C) One (D) Four

CHEMISTRY
GROUP: FIRST

SUBJECTIVE

TIME: 2 HRS 40 MINUTES
MARKS: 68

DGL-12-1-23 SECTION-I

QUESTION NO. 2 Write short answers any Eight (8) of the following

16

- What is effect of strong heating on orthoboric acid?
- Justify that Aluminum is amphoteric. Give an examples.
- What are semiconductors and give effect of temperature on semiconductors?
- Why the straight chain structures of benzene have been ruled out? Give two reasons.
- Write mechanism for the halogenation of benzene in the presence of catalyst.
- How does sulphonation of benzene take place? Give its reaction.
- Write cyclic structures of glucose and fructose.
- Explain denaturation of proteins.
- What are steroids? Write structure of steroid nucleus.
- What is the effect of CO on human health?
- What is meant by hydrosphere?
- What is meant by recycling of waste?

QUESTION NO. 3 Write short answers any Eight (8) of the following

16

- Draw the structure of ethene according to sp^2 -hybridization.
- Define heterocyclic compounds. Give one example.
- Convert 1-propanol to $CH_3 - CH_2 - CH_2 - Cl$
- How is ethane formed by the reaction of Grignard reagent?
- Write down any two uses of ethene.
- What is laughing gas?
- Draw the structure of white phosphorus and red phosphorus.
- P_2O_5 is a powerful dehydrating agent. Prove it giving two examples.
- How will you convert $CH_3 - CH_2 - Br \longrightarrow (CH_3 - CH_2)_4 N^+ Br^-$
- Prepare 1-propanol by using methanal.
- Write down any four qualities of a good fertilizer.
- Mention non woody raw materials for the manufacturing of paper (any four)

QUESTION NO. 4 Write short answers any Six (6) of the following

12

- What are paramagnetic and diamagnetic substances?
- Write two uses of $KMnO_4$.
- Define coordination number and coordination sphere.
- Give the reactions of Ethanol with (i) $SOCl_2$ (ii) PCl_5
- Why is phenol acidic in nature?
- Give the iodoform test to distinguish between methanol and ethanol.
- Convert acetaldehyde into lactic acid.
- Describe Benedict's solution test.
- Convert ethanol into ethanoic acid.

SECTION-II

Note: Attempt any Three questions from this section

8 x 3 = 24

Q.5-(A)	How do you justify the position of hydrogen at the top of I-A and VII-A groups?
(B)	Mention the properties of beryllium in which it differs from its own family members.
Q.6-(A)	Write a brief note on: (i) Disproportionation reactions of Chlorine. (ii) I_2O_5 preparation and one reaction
(B)	Define paper. Explain the digestion process in detail.
Q.7-(A)	What is isomerism? Discuss any three types of structured isomerism.
(B)	Discuss the atomic orbital treatment to explain the structure of benzene.
Q.8-(A)	Write reaction of $HC \equiv CH$ with (i) H_2O in the presence of $H_2SO_4 / HgSO_4$ (ii) Strong alkaline $KMnO_4$
(B)	Discuss in detail the mechanism of nucleophilic substitution unimolecular (S_N1)
Q.9-(A)	Explain Cannizzaro's reaction with mechanism. Which aldehydes give this reaction?
(B)	How are carboxylic acids prepared from esters and alkenes?

D

CHEMISTRY

TIME: 20 MINUTES

GROUP : SECOND

OBJECTIVE

MARKS: 17

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. Use marker or pen to fill the Circle. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

DGK-12-2-23

1	Which of the following acid can be use as a catalyst in Friedal - Crafts reaction ? (A) $AlCl_3$ (B) HNO_3 (C) $BeCl_2$ (D) $NaCl$
2	When CO_2 is made to react with ethyl magnesium iodide, followed by acid hydrolysis, the product is (A) Propane (B) Propanoic acid (C) Propanal (D) Propanol
3	Ethanol can be converted into ethanoic acid by (A) Hydrogenation (B) Hydration (C) Oxidation (D) Fermentation
4	Rectified spirit contains alcohol about (A) 80 % (B) 85 % (C) 90 % (D) 95 %
5	Silver mirror test is given by . (A) Ethers (B) Ketones (C) Aldehydes (D) Alcohols
6	Amino acids are prepared by (A) Kolbe 's method (B) Strecker Synthesis (C) Fittig Reaction (D) William's son synthesis
7	The percentage of nitrogen in urea is (A) 16 % (B) 46 % (C) 56 % (D) 80 %
8	Which one of the following base is not present in DNA? (A) Adenine (B) Uracil (C) Thymine (D) Cytosine
9	The proportion of N_2 in atmosphere is (A) 78 % (B) 21 % (C) 0.9 % (D) 0.03 %
10	Keeping in view the size of atoms, which order is the correct one? (A) $Mg > Sr$ (B) $Ba > Mg$ (C) $Lu > Ce$ (D) $Cl > I$
11	The oxides of Beryllium are (A) Acidic (B) Basic (C) Amphoteric (D) None of these
12	Which metal is used in thermite process due to its acitivity? (A) Iron (B) Copper (C) Aluminium (D) Zinc
13	Among group V-A elements the most electronegative element is (A) Sb (B) N (C) P (D) As
14	Which of the following Hydrogen halide is the weakest acid in solution? (A) HF (B) HBr (C) HCl (D) HI
15	The colour of transition metal complexes is due to (A) d – d transition of electrons (B) Paramagnetic nature of transition elements (C) ionization (D) Loss of s – electrons
16	The state of hybrindization of carbon atom in methane is (A) sp^3 (B) sp^2 (C) sp (D) dsp^2
17	The formula of chloroform is (A) CH_3Cl (B) CCl_4 (C) CH_2Cl_2 (D) $CHCl_3$

122 - (Obj) - 1st Annual 2023

SEQUENCE - 3

(PAPER CODE - 8486)

D

CHEMISTRY
GROUP: SECOND

SUBJECTIVE

TIME: 2 HRS 40 MINUTES
MARKS: 68

DQK-12-2-23 SECTION-I

QUESTION NO. 2 Write short answers any Eight (8) of the following

16

- | | |
|------|--|
| i | What are silicates ? Give two examples. |
| ii | How does H_3BO_3 react with ethyl alcohol ? |
| iii | Explain why CO_2 is non – polar and acidic in character ? |
| iv | How is TNT prepared from toluene ? |
| v | Write structural formula of the following compounds.
(a) Naphthalene (b) Acetophenone |
| vi | Why –OH group is ortho - para directing ? |
| vii | What is the difference between a glycosidic linkage and a peptide linkage ? |
| viii | How “ pH change ” and “ radiation ” affect the enzyme activity ? |
| ix | How is soap prepared from triglyceride ? Give reaction. |
| x | Which chloride of nitrogen is powerful eye irritant and how is it formed from ammonia ? |
| xi | How are detergents threats to aquatic animal life ? |
| xii | Why is chlorine used for the disinfection of water ? |

QUESTION NO. 3 Write short answers any Eight (8) of the following

16

- | | |
|------|--|
| i | What is Crude Oil ? Give its importance. |
| ii | Give names and formulas of any four functional groups. |
| iii | What is Sabatier-Sendern's reaction ? |
| iv | Discuss the reactivity of Pi (π) bond. |
| v | Give any two commercial uses of ethyne. |
| vi | What is meant by fuming nitric acid ? |
| vii | Give precipitation reactions of H_2SO_4 . |
| viii | How is HNO_2 prepared ? Give one reaction. |
| ix | Discuss the reactivity of alkyl halides. |
| x | Define nucleophile, give two examples. |
| xi | Name essential steps in paper manufacturing process. |
| xii | Give the importance of nitrogen fertilizers. |

QUESTION NO. 4 Write short answers any Six (6) of the following

12

- | | |
|------|--|
| i | Give the systematic names of following complexes.
(a) $K_4[Fe(CN)_6]$ (b) $[PtCl(NO_2)(NH_3)_4]SO_4$ |
| ii | How does the electronic configuration of valence shell affect paramagnetic properties of transition elements ? |
| iii | Give two methods of preparations of $K_2Cr_2O_7$ |
| iv | How will you distinguish between 1 – propanol and 2 – propanol ? |
| v | How will you convert formaldehyde into ethyl alcohol ? |
| vi | How does phenol react with (a) Zn dust (b) Bromine water |
| vii | Write 2, 4 – DNPH – Test of carbonyl compounds. |
| viii | Give the mechanism of phenyl hydrazine with acetone. |
| ix | What is vinegar ? |

SECTION-II

Note: Attempt any Three questions from this section

8 x 3 = 24

Q.5-(A)	How do you justify the position of hydrogen at the top of group IA and VII A elements ?
(B)	Describe the peculiar behavior of beryllium.
Q.6-(A)	What are halogens ? Give three application of Bromine and Iodine each.
(B)	What is Paper ? Describe the process of digestion in paper industry.
Q.7-(A)	Define structural isomerism. Discuss its three types.
(B)	Define sulphonation of benzene. Discuss its mechanism.
Q.8-(A)	Starting from ethyne prepare: (1) Acetaldehyde (2) Benzene (3) Chloroprene (4) Glyoxal
(B)	Define nucleophil substitution reaction. Describe in detail S_N1 reactions.
Q.9-(A)	Explain with mechanism Aldol Condensation.
(B)	How Acetic acid is prepared from (i) Grignard reagent (ii) Hydrolysis of Esters (iii) Alkene (iv) Alcohol

D

2023 (1 st -A)		Roll No: SP
INTERMEDIATE PART-II (12 th Class)		
CHEMISTRY PAPER-II GROUP-I		
TIME ALLOWED: 2.40 Hours	SUBJECTIVE	MAXIMUM MARKS: 68
NOTE: Write same question number and its parts number on answer book, as given in the question paper.		

SECTION-I

2. Attempt any eight parts.		8 × 2 = 16
(i)	What is chemical garden?	2
(ii)	How is boric acid prepared from borax?	2
(iii)	What is the effect of heat on boric acid?	2
(iv)	Complete the following reactions:	1 + 1
(a)	 + SO ₃ $\xrightarrow{\text{Forming H}_2\text{SO}_4}$?	(b)  + $\frac{15}{2} \text{O}_2 \longrightarrow$?
(v)	Give the general mechanism of electrophilic substitution reactions of benzene.	2
(vi)	What is meant by the terms? (a) Nitration (b) Oxidation	1 + 1
(vii)	What are steroids? Give one example.	2
(viii)	Name the important bases which make up DNA and RNA.	2
(ix)	Prepare polystyrene and give its two uses?	2
(x)	What is acid rain?	2
(xi)	How do chlorofluorocarbons destroy the ozone layer?	2
(xii)	Write the names of various stages in water treatment.	2
3. Attempt any eight parts.		8 × 2 = 16
(i)	What are alicyclic compounds? Give their two examples.	
(ii)	What is cracking of petroleum? Give an example.	
(iii)	How will you convert acetic acid to ethane?	
(iv)	Describe Wolf-Kishner's reduction.	
(v)	How is Mustard gas prepared from ethene?	
(vi)	Why do the elements of group VI A other than oxygen show more than two oxidation states?	
(vii)	Why is SO ₃ dissolved in H ₂ SO ₄ and not in water?	
(viii)	Describe "Ring test" for the confirmation of the presence of nitrate ions in solution.	
(ix)	How is Grignard's reagent prepared? Give its equation.	
(x)	What is an electrophile? Give its two examples.	
(xi)	Define Paper. Mention its two woody raw materials.	
(xii)	What are Macronutrients? Give their requirement per acre.	
4. Attempt any six parts.		6 × 2 = 12
(i)	How is paramagnetism related with unpaired electrons?	
(ii)	Why do transition elements exhibit more than one oxidation states?	
(iii)	What is tin plating?	
(iv)	Give two reactions which involve the cleavage of O-H bond in alcohols.	
(v)	Why can 100% alcohol not be prepared by fermentation?	
(vi)	How phenol is prepared from Dow's process?	
(vii)	Give the reaction of acetone with hydrazine and hydroxylamine.	
(viii)	How is formaldehyde prepared on industrial scale?	
(ix)	How is acetic acid prepared from CO ₂ ?	

SECTION-II

NOTE: Attempt any three questions.		3 × 8 = 24
5.(a)	State modern periodic law. How the classification of elements in different blocks helps in understanding their chemistry?	1 + 3 = 4
(b)	Write down the problems and their solutions during working of Diaphragm cell.	2 + 2 = 4
6.(a)	Describe the peculiar behaviour of Fluorine. (any four points)	4
(b)	What are the principal methods of chemical pulping? Discuss in detail digestion process involved in neutral sulphite semi chemical process?	1 + 3 = 4
7.(a)	Write a note on reforming of Petroleum.	4
(b)	Explain structure of Benzene by resonance method.	4
8.(a)	How will you bring about the conversion of ethyne into neoprene? Mention the equations.	4
(b)	What are nucleophilic substitutions reactions? Explain S _N 1 reaction.	4
9.(a)	What is cyclic polymerization of Alkynes? Give the mechanism of aldol condensation reaction.	4
(b)	Describe two methods for the preparation of amino acids.	4

2023 (1 st -A)		Roll No: 59
INTERMEDIATE PART-II (12 th Class)		
CHEMISTRY PAPER-II GROUP-II		
TIME ALLOWED: 2.40 Hours	SUBJECTIVE	MAXIMUM MARKS: 68
NOTE: Write same question number and its parts number on answer book, as given in the question paper.		

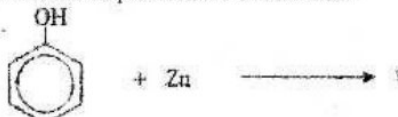
SECTION-I

2. Attempt any eight parts.		8 × 2 = 16
(i)	Write two uses of borax.	
(ii)	Why are liquid silicones preferred over ordinary organic lubricants?	
(iii)	What is asbestos? Give its uses.	
(iv)	Write two addition reactions of benzene.	
(v)	How will you prepare benzene from n – Hexane?	
(vi)	How does ozone react with benzene to give glyoxal?	
(vii)	What is a copolymer? Give an equation for its preparation.	
(viii)	Draw the structure of sucrose.	
(ix)	What are conjugated proteins?	
(x)	Mention the conditions which are required for the formation of smog?	
(xi)	What do you mean by biochemical oxygen demand (BOD)?	
(xii)	What is incineration? Give its two disadvantages.	
3. Attempt any eight parts.		8 × 2 = 16
(i)	What is meant by fuming nitric acid?	
(ii)	Give two methods for preparation of NO ₂ .	
(iii)	Give the reaction occurring in contact tower to prepare H ₂ SO ₄ .	
(iv)	What is functional group? Write formulas of two oxygen containing functional groups.	
(v)	Define metamerism with one example.	
(vi)	Give reaction for incomplete oxidation of methane.	
(vii)	What do you mean by inertness of sigma bond in alkanes?	
(viii)	What is meant by dehydrohalogenation of alkyl halides?	
(ix)	What is nucleophile and electrophile?	
(x)	How can ethyl bromide be converted into ethyl acetate and ethyl thioalcohols?	
(xi)	What are fertilizers? Give any two qualities of good fertilizer.	
(xii)	Write down names of woody raw materials of paper.	
4. Attempt any six parts.		6 × 2 = 12
(i)	Differentiate between paramagnetism and diamagnetism.	
(ii)	What is sacrificial corrosion?	
(iii)	Define the term coordination number with two examples.	
(iv)	What is Williamson's Synthesis?	
(v)	Ethanol obtained by fermentation does not exceed 14%. Give the reason.	
(vi)	Write down the different products obtained by dehydration of ethanol at different temperatures.	
(vii)	What are oximes? How can they be produced?	
(viii)	How can aldehydes and ketones be differentiated by Fehling's solution test?	
(ix)	Differentiate between protein and polypeptide.	

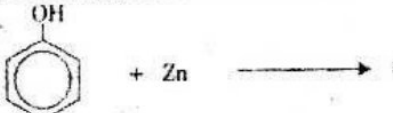
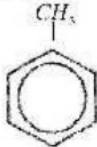
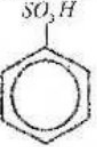
SECTION-II

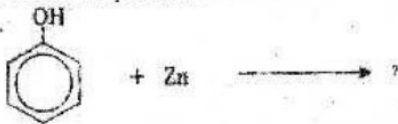
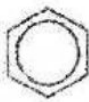
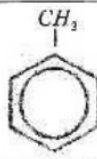
NOTE: Attempt any three questions.		3 × 8 = 24
5.(a)	What are the oxides? Classify oxides on the basis of acidic and basic behaviour with examples.	4
(b)	Describe any eight points to show the role of lime in industry.	4
6.(a)	Give the rules for nomenclature of oxyacids of halogens.	4
(b)	Discuss the wet process for the manufacture of cement up to clinker formation.	4
7.(a)	Define sp hybridization. Explain the formation of ethyne molecule according to this approach.	4
(b)	Write a note on stability of benzene.	4
8.(a)	Write down the mechanism of Kolbe's electrolytic method for the preparation of ethene.	4
(b)	Explain the mechanism of S _N 2 reactions in detail.	4
9.(a)	Describe with mechanism "aldol condensation" reaction. Why formaldehyde does not give this reaction?	3+1
(b)	How would you convert acetic acid into the following compounds?	4
(i) Methane (ii) Acetyl chloride (iii) Acetamide (iv) Acetic anhydride		

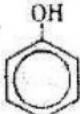
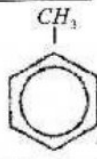
24-2023(1st-A)-16000 (MULTAN)

Paper Code Number: 4481	2023 (1 st -A) INTERMEDIATE PART-II (12 th Class)		Roll No: <u>54</u>		
CHEMISTRY PAPER-II GROUP-I					
TIME ALLOWED: 20 Minutes		OBJECTIVE	MAXIMUM MARKS: 17		
Q.No.1	You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.				
S.#	QUESTIONS	A	B	C	D
1	Pick the element having least melting point among alkaline earth metals?	Be	Ca	Mg	Sr
2	The mineral sylvite has the chemical formula:	NaCl	KCl	MgCO ₃	CaCO ₃
3	Boric acid cannot be used:	As antiseptic in medicine	For washing eyes	In soda bottles	For enamels and glazes
4	Oxidation of NO in air produces:	N ₂ O	N ₂ O ₃	N ₂ O ₅	N ₂ O ₄
5	Which halogen does occur naturally in positive oxidation state?	I ₂	Br ₂	Cl ₂	F ₂
6	The purest form of commercial iron is:	Pig iron	Cast iron	Wrought iron	Steel
7	Which one of the following is not heterocyclic compound?	Naphthalene	Pyridine	Furan	Pyrrole
8	The reaction step shown is known as: $H_3C-CH_2-OSO_3H + H_2O \xrightarrow{100^\circ C} H_3C-CH_2-OH + H_2SO_4$	Hydrolysis	Hydration	Hydroxylation	Hydrogenation
9	Predict the product in the reaction: 				
10	For which mechanism the first step involved is the same?	E ₁ and E ₂	E ₂ and S _N 2	S _N 1 and E ₂	E ₁ and S _N 1
11	Which compound shows maximum hydrogen bonding with water?	C ₂ H ₆	C ₂ H ₅ Cl	C ₂ H ₅ OH	CH ₃ -O-CH ₃
12	Which among the following is known as Carboic acid?	C ₆ H ₅ OH	C ₂ H ₅ OH	CH ₃ COOH	CH ₃ -O-CH ₃
13	Ketones are prepared by oxidation of:	Primary alcohol	Secondary alcohol	Tertiary alcohol	All of these
14	Acetamide is prepared by heating:	Ammonium acetate	Methyl cyanide	Ethyl acetate	Ethyl cyanide
15	Natural starch consists of how much percentage of amylose?	50%	80 – 90%	10 – 20 %	40%
16	Micronutrients are required in the quantity ranging from:	4 – 40 g	6 – 200 g	6 – 200 kg	4 – 40 kg
17	A single chloride free radical can destroy how many ozone molecules?	10 ⁵	10 ⁴	10 ²	10 ³

23(Obj)(★)-2023(1st-A)-18000 (MULTAN)

Paper Code Number: 4483		2023 (1 st -A) INTERMEDIATE PART-II (12 th Class)		Roll No: <u>55</u>	
CHEMISTRY PAPER-II GROUP-I					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1		You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.			
S.#	QUESTIONS	A	B	C	D
1	The reaction step shown is known as: $H_3C-CH_2-OSO_3H + H_2O \xrightarrow{100^\circ C} H_3C-CH_2-OH + H_2SO_4$	Hydrolysis	Hydration	Hydroxylation	Hydrogenation
2	Predict the product in the reaction: 				
3	For which mechanism the first step involved is the same?	E_1 and E_2	E_2 and SN_2	SN_1 and E_2	E_1 and SN_1
4	Which compound shows maximum hydrogen bonding with water?	C_2H_6	C_2H_5Cl	C_2H_5OH	CH_3-O-CH_3
5	Which among the following is known as Carboic acid?	C_6H_5OH	C_2H_5OH	CH_3COOH	CH_3-O-CH_3
6	Ketones are prepared by oxidation of:	Primary alcohol	Secondary alcohol	Tertiary alcohol	All of these
7	Acetamide is prepared by heating:	Ammonium acetate	Methyl cyanide	Ethyl acetate	Ethyl cyanide
8	Natural starch consists of how much percentage of amylose?	50%	80 – 90%	10 – 20 %	40%
9	Micronutrients are required in the quantity ranging from:	4 – 40 g	6 – 200 g	6 – 200 kg	4 – 40 kg
10	A single chloride free radical can destroy how many ozone molecules?	10^6	10^4	10^2	10^5
11	Pick the element having least melting point among alkaline earth metals?	Be	Ca	Mg	Sr
12	The mineral sylvite has the chemical formula:	NaCl	KCl	$MgCO_3$	$CaCO_3$
13	Boric acid cannot be used:	As antiseptic in medicine	For washing eyes	In soda bottles	For enamels and glazes
14	Oxidation of NO in air produces:	N_2O	N_2O_3	N_2O_5	N_2O_4
15	Which halogen does occur naturally in positive oxidation state?	I_2	Br_2	Cl_2	F_2
16	The purest form of commercial iron is:	Pig iron	Cast iron	Wrought iron	Steel
17	Which one of the following is not heterocyclic compound?	Naphthalene	Pyridine	Furan	Pyrrole

Paper Code Number: 4485		2023 (1 st -A) INTERMEDIATE PART-II (12 th Class)		Roll No: <u>56</u>	
CHEMISTRY PAPER-II GROUP-I					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.					
S.#	QUESTIONS	A	B	C	D
1	Which halogen does occur naturally in positive oxidation state?	I ₂	Br ₂	Cl ₂	F ₂
2	The purest form of commercial iron is:	Pig iron	Cast iron	Wrought iron	Steel
3	Which one of the following is not heterocyclic compound?	Naphthalene	Pyridine	Furan	Pyrrole
4	The reaction step shown is known as: $H_3C-CH_2-OSO_3H + H_2O \xrightarrow{100^\circ C} H_3C-CH_2-OH + H_2SO_4$	Hydrolysis	Hydration	Hydroxylation	Hydrogenation
5	Predict the product in the reaction: 				
6	For which mechanism the first step involved is the same?	E ₁ and E ₂	E ₂ and SN ₂	SN ₁ and E ₂	E ₁ and SN ₁
7	Which compound shows maximum hydrogen bonding with water?	C ₂ H ₆	C ₂ H ₅ Cl	C ₂ H ₅ OH	CH ₃ -O-CH ₃
8	Which among the following is known as Carboic acid?	C ₆ H ₅ OH	C ₂ H ₅ OH	CH ₃ COOH	CH ₃ -O-CH ₃
9	Ketones are prepared by oxidation of:	Primary alcohol	Secondary alcohol	Tertiary alcohol	All of these
10	Acetamide is prepared by heating:	Ammonium acetate	Methyl cyanide	Ethyl acetate	Ethyl cyanide
11	Natural starch consists of how much percentage of amylose?	50%	80 – 90%	10 – 20 %	40%
12	Micronutrients are required in the quantity ranging from:	4 – 40 g	6 – 200 g	6 – 200 kg	4 – 40 kg
13	A single chloride free radical can destroy how many ozone molecules?	10 ⁶	10 ⁴	10 ²	10 ⁵
14	Pick the element having least melting point among alkaline earth metals?	Be	Ca	Mg	Sr
15	The mineral sylvite has the chemical formula:	NaCl	KCl	MgCO ₃	CaCO ₃
16	Boric acid cannot be used:	As antiseptic in medicine	For washing eyes	In soda bottles	For enamels and glazes
17	Oxidation of NO in air produces:	N ₂ O	N ₂ O ₃	N ₂ O ₅	N ₂ O ₄

Paper Code Number: 4487		2023 (1 st -A) INTERMEDIATE PART-II (12 th Class)		Roll No: <u>57</u>	
CHEMISTRY PAPER-II GROUP-I					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.					
S.#	QUESTIONS	A	B	C	D
1	The mineral sylvite has the chemical formula:	NaCl	KCl	MgCO ₃	CaCO ₃
2	Boric acid cannot be used:	As antiseptic in medicine	For washing eyes	In soda bottles	For enamels and glazes
3	Oxidation of NO in air produces:	N ₂ O	N ₂ O ₃	N ₂ O ₅	N ₂ O ₄
4	Which halogen does occur naturally in positive oxidation state?	I ₂	Br ₂	Cl ₂	F ₂
5	The purest form of commercial iron is:	Pig iron	Cast iron	Wrought iron	Steel
6	Which one of the following is not heterocyclic compound?	Naphthalene	Pyridine	Furan	Pyrrole
7	The reaction step shown is known as: $H_3C-CH_2-OSO_3H + H_2O \xrightarrow{100^\circ C} H_3C-CH_2-OH + H_2SO_4$	Hydrolysis	Hydration	Hydroxylation	Hydrogenation
8	Predict the product in the reaction:  + Zn $\longrightarrow$?				
9	For which mechanism the first step involved is the same?	E ₁ and E ₂	E ₂ and SN ₂	SN ₁ and E ₂	E ₁ and SN ₁
10	Which compound shows maximum hydrogen bonding with water?	C ₂ H ₆	C ₂ H ₅ Cl	C ₂ H ₅ OH	CH ₃ -O-CH ₃
11	Which among the following is known as Carboic acid?	C ₆ H ₅ OH	C ₂ H ₅ OH	CH ₃ COOH	CH ₃ -O-CH ₃
12	Ketones are prepared by oxidation of:	Primary alcohol	Secondary alcohol	Tertiary alcohol	All of these
13	Acetamide is prepared by heating:	Ammonium acetate	Methyl cyanide	Ethyl acetate	Ethyl cyanide
14	Natural starch consists of how much percentage of amylose?	50%	80 - 90%	10 - 20 %	40%
15	Micronutrients are required in the quantity ranging from:	4 - 40 g	6 - 200 g	6 - 200 kg	4 - 40 kg
16	A single chloride free radical can destroy how many ozone molecules?	10 ⁵	10 ⁴	10 ²	10 ³
17	Pick the element having least melting point among alkaline earth metals?	Be	Ca	Mg	Sr

Paper Code		2023 (1 st -A)		Roll No: _____	
Number: 4482		INTERMEDIATE PART-II (12 th Class)			
CHEMISTRY PAPER-II GROUP-II					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1	You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.				
S.#	QUESTIONS	A	B	C	D
1	Mark the correct statement:	Metallic character increases down the group.	Metallic character increases from left to right along a period.	Metallic character remains the same down the group.	Metallic character remains the same from left to right along a Period.
2	The mineral ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) has the general name:	Epsom salt	Dolomite	Calcite	Gypsum
3	Which element forms an ion with charge +3?	Beryllium	Aluminium	Carbon	Silicon
4	Which of the following species has the maximum number of unpaired electrons?	O_2	O_2^+	O_2^-	O_2^{2-}
5	Which of the following hydrogen halide is the weakest acid in solution?	HI	HBr	HF	HCl
6	Coordination number of Pt in $[\text{PtCl}(\text{NO}_2)(\text{NH}_3)_4]$ is:	2-	4	1	6
7	A double bond consists of:	Two sigma bonds	One sigma and one Pi-bond	One sigma and two Pi-bonds	Two Pi-bonds
8	β , β' - dichloroethyl sulphide is commonly known as:	Mustard gas	Laughing gas	Phosgene gas	Bio-gas
9	Amongst the following, the compound that can be most readily sulphonated is:	Nitrobenzene	Benzene	Toluene	Chlorobenzene
10	When CH_3I is made to react with ethyl magnesium iodide, followed by acid hydrolysis, the product formed is:	Propane	Propanoic acid	Propanal	Propanol
11	The solution of which acid is used for manufacture of pickles:	Acetic acid	Formic acid	Benzoic acid	Butanoic acid
12	Which of the following reagent will react with ketones?	Tollen's reagent	Fehling's reagent	Benedict's reagent	Grignard's reagent
13	Which compound will have the maximum repulsion with H_2O ?	$\text{C}_2\text{H}_5\text{OH}$	$\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$	C_6H_6	$\text{CH}_3 - \text{O} - \text{CH}_3$
14	Which compound is used as anti-freezing agent in automobile radiator?	CH_3OH	$\text{CH}_3 - \text{O} - \text{CH}_3$	$\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$	$\text{CH}_3\text{CH}_2\text{GCH}_2\text{CH}_3$
15	Vegetable fats are:	Unsaturated fatty acids	Essential oils obtained from plants	Glycerides of saturated fatty acids	Glycerides of unsaturated fatty acids
16	Major nitrogen fertilizers are:	Urea and ammonium nitrate	Urea and super phosphate	Ammonia and DAP	Diammonium phosphate only
17	The substances which directly kill the unwanted organisms are called:	Fungicides	Insecticides	Pesticides	Herbicides

Paper Code Number: 4484		2023 (1 st -A) INTERMEDIATE PART-II (12 th Class)		Roll No: <u> </u>	
CHEMISTRY PAPER-II GROUP-II					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1	You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.				
S.#	QUESTIONS	A	B	C	D
1	A double bond consists of:	Two sigma bonds	One sigma and one Pi-bond	One sigma and two Pi-bonds	Two Pi-bonds
2	β , β' – dichloroethyl sulphide is commonly known as:	Mustard gas	Laughing gas	Phosgene gas	Bio-gas
3	Amongst the following, the compound that can be most readily sulphonated is:	Nitrobenzene	Benzene	Toluene	Chlorobenzene
4	When CO_2 is made to react with ethyl magnesium iodide, followed by acid hydrolysis, the product formed is:	Propane	Propanoic acid	Propanal	Propanol
5	The solution of which acid is used for manufacture of pickles:	Acetic acid	Formic acid	Benzoic acid	Butanoic acid
6	Which of the following reagent will react with ketones?	Tollen's reagent	Fehling's reagent	Benedict's reagent	Grignard's reagent
7	Which compound will have the maximum repulsion with H_2O ?	C_2H_5OH	$CH_3CH_2CH_2OH$	C_2H_6	CH_3-O-CH_3
8	Which compound is used as anti-freezing agent in automobile radiator?	CH_3OH	CH_3-O-CH_3	$CH_3CH_2CH_2OH$	$CH_3CH_2OCH_2CH_3$
9	Vegetable fats are:	Unsaturated fatty acids	Essential oils obtained from plants	Glycerides of saturated fatty acids	Glycerides of unsaturated fatty acids
10	Major nitrogen fertilizers are:	Urea and ammonium nitrate	Urea and super phosphate	Ammonia and DAP	Diammonium phosphate only
11	The substances which directly kill the unwanted organisms are called:	Fungicides	Insecticides	Pesticides	Herbicides
12	Mark the correct statement:	Metallic character increases down the group.	Metallic character increases from left to right along a period.	Metallic character remains the same down the group.	Metallic character remains the same from left to right along a Period.
13	The mineral ($CaSO_4 \cdot 2H_2O$) has the general name:	Epsom salt	Dolomite	Calcite	Gypsum
14	Which element forms an ion with charge +3?	Beryllium	Aluminium	Carbon	Silicon
15	Which of the following species has the maximum number of unpaired electrons?	O_3	O_2	O_2^-	O_2^{2-}
16	Which of the following hydrogen halide is the weakest acid in solution?	HI	HBr	HF	HCl
17	Coordination number of Pt in $[PtCl(NO_2)(NH_3)_4]$ is:	2–	4	1	6

Paper Code		2023 (1 st -A)		Roll No: <u>62</u>	
Number: 4486		INTERMEDIATE PART-II (12 th Class)			
CHEMISTRY PAPER-II GROUP-II					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1	You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.				
S.#	QUESTIONS	A	B	C	D
1	Which of the following reagent will react with ketones?	Tollen's reagent	Fehling's reagent	Benedict's reagent	Grignard's reagent
2	Which compound will have the maximum repulsion with H_2O ?	C_2H_5OH	$CH_3CH_2CH_2OH$	C_6H_6	CH_3-O-CH_3
3	Which compound is used as anti-freezing agent in automobile radiator?	CH_3OH	CH_3-O-CH_3	$CH_3CH_2CH_2OH$	$CH_3CH_2CH_2CH_3$
4	Vegetable fats are:	Unsaturated fatty acids	Essential oils obtained from plants	Glycerides of saturated fatty acids	Glycerides of unsaturated fatty acids
5	Major nitrogen fertilizers are:	Urea and ammonium nitrate	Urea and super phosphate	Ammonia and DAP	Diammonium phosphate only
6	The substances which directly kill the unwanted organisms are called:	Fungicides	Insecticides	Pesticides	Herbicides
7	Mark the correct statement:	Metallic character increases down the group.	Metallic character increases from left to right along a period.	Metallic character remains the same down the group.	Metallic character remains the same from left to right along a Period.
8	The mineral $(CaSO_4 \cdot 2H_2O)$ has the general name:	Epsom salt	Dolomite	Calcite	Gypsum
9	Which element forms an ion with charge +3?	Beryllium	Aluminium	Carbon	Silicon
10	Which of the following species has the maximum number of unpaired electrons?	O_2	O_2^-	O_2^+	O_2^{2+}
11	Which of the following hydrogen halide is the weakest acid in solution?	HI	HBr	HIF	HCl
12	Coordination number of Pt in $[PtCl(NO_2)(NH_3)_4]$ is:	2-	4	1	6
13	A double bond consists of:	Two sigma bonds	One sigma and one Pi-bond	One sigma and two Pi-bonds	Two Pi-bonds
14	β, β' -dichloroethyl sulphide is commonly known as:	Mustard gas	Laughing gas	Phosgene gas	Bio-gas
15	Amongst the following, the compound that can be most readily sulphonated is:	Nitrobenzene	Benzene	Toluene	Chlorobenzene
16	When CO_2 is made to react with ethyl magnesium iodide, followed by acid hydrolysis, the product formed is:	Propane	Propanoic acid	Propanal	Propanol
17	The solution of which acid is used for manufacture of pickles:	Acetic acid	Formic acid	Benzoic acid	Butanoic acid

Paper Code Number: 4488		2023 (1 st A) INTERMEDIATE PART-II (12 th Class)		Roll No: <u>63</u>	
CHEMISTRY PAPER-II GROUP-II					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1		You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.			
S.#	QUESTIONS	A	B	C	D
1	Vegetable fats are:	Unsaturated fatty acids	Essential oils obtained from plants	Glycerides of saturated fatty acids	Glycerides of unsaturated fatty acids
2	Major nitrogen fertilizers are:	Urea and ammonium nitrate	Urea and super phosphate	Ammonia and DAP	Diammonium phosphate only
3	The substances which directly kill the unwanted organisms are called:	Fungicides	Insecticides	Pesticides	Herbicides
4	Mark the correct statement:	Metallic character increases down the group.	Metallic character increases from left to right along a period.	Metallic character remains the same down the group.	Metallic character remains the same from left to right along a Period.
5	The mineral ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) has the general name:	Epsom salt	Dolomite	Calcite	Gypsum
6	Which element forms an ion with charge +3?	Beryllium	Aluminium	Carbon	Silicon
7	Which of the following species has the maximum number of unpaired electrons?	O_2	O_2^+	O_2^-	O_2^{2-}
8	Which of the following hydrogen halide is the weakest acid in solution?	HI	HBr	HF	HCl
9	Coordination number of Pt in $[\text{PtCl}(\text{NO})_2(\text{NH}_3)_2]$ is:	2	4	1	6
10	A double bond consists of:	Two sigma bonds	One sigma and one Pi-bond	One sigma and two Pi-bonds	Two Pi-bonds
11	β , β' - dichloroethyl sulphide is commonly known as:	Mustard gas	Laughing gas	Phosgene gas	Bio-gas
12	Amongst the following, the compound that can be most readily sulphonated is:	Nitrobenzene	Benzene	Toluene	Chlorobenzene
13	When CO_2 is made to react with ethyl magnesium iodide, followed by acid hydrolysis, the product formed is:	Propane	Propanoic acid	Propanal	Propanol
14	The solution of which acid is used for manufacture of pickles:	Acetic acid	Formic acid	Benzoic acid	Butanoic acid
15	Which of the following reagent will react with ketones?	Tollen's reagent	Fehling's reagent	Benedict's reagent	Grignard's reagent
16	Which compound will have the maximum repulsion with H_2O ?	$\text{C}_2\text{H}_5\text{OH}$	$\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$	C_6H_6	$\text{CH}_3-\text{O}-\text{CH}_3$
17	Which compound is used as anti-freezing agent in automobile radiator?	CH_3OH	$\text{CH}_3-\text{O}-\text{CH}_3$	$\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$	$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$

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Chemistry

Paper : II

Group: I

Roll No.

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

(To be filled in by the candidate)

Time : 20 Minutes

Objective – (i)

Marks : 17

Paper Code 8 4 8 1

65WL-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

311-423-1A-13000 ★

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

Time : 2:40 Hours

Paper : II

Group: I

Subjective *502-12-1-23*

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

311-423-1A-13000

Roll No.

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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%

312-423-1A-8000

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Roll No.

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(To be filled in by the candidate)

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

312-423-1A-8000

SGD-12-1-23

1223 Warning:- Please write your Roll No. in the space provided and sign. Roll No. _____
(Inter Part - II) (Session 2019-21 to 2021-23) Sig. of Student _____

Chemistry (Objective)

Group - I

Paper (II)

PAPER CODE 4483

Maximum Marks:- 17

Time Allowed:- 20 minutes

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. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write PAPER CODE, which is printed on this question paper, on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

- 1) Vinyl acetylene combines with HCl to form:
(A) Polyacetylene (B) Benzene (C) Chloroprene (D) Divinyl acetylene
- 2) Which statement is correct?
(A) Metallic Character increases down the group (B) Metallic character increases from left to right along a period (C) Metallic character remains the same from left to right along a period (D) Metallic character remains the same down the group
- 3) Which of the following is not soluble in water:
(A) Sodium Sulphate (B) Potassium Sulphate (C) Zinc Sulphate (D) Barium Sulphate
- 4) Boric acid cannot be used:
(A) As antiseptic in medicine (B) For washing eyes (C) In soda bottles (D) For enamels and glazes
- 5) SO_3 is not absorbed in water directly to form H_2SO_4 because:
(A) The reaction does not go to completion (B) The reaction is quite slow (C) The reaction is highly exothermic (D) SO_3 is insoluble in water
- 6) Bleaching powder may be produced by passing chlorine over:
(A) Calcium carbonate (B) Hydrated calcium sulphate (C) Anhydrous calcium sulphate (D) Calcium hydroxide.
- 7) Coordination number of Pt in $[PtCl(NO_2)(NH_3)_4]$ is:
(A) 2 (B) 4 (C) 1 (D) 6
- 8) Absolute alcohol can be obtained by redistillation of rectified spirit in the presence of:
(A) Na_2O (B) CuO (C) Ag_2O (D) CaO
- 9) Aromatic compounds burn with sooty flame because:
(A) They have high percentage of hydrogen (B) They have a ring structure (C) They have high percentage of carbon (D) They resist reaction with air.
- 10) The rate of $E1$ reaction depends upon:
(A) The concentration of substrate (B) The concentration of nucleophile (C) The concentration of substrate as well as Nucleophile (D) The concentration of eliminated group
- 11) Linear shape is associated with which set of hybrid orbital?
(A) sp (B) sp^2 (C) sp^3 (D) dsp^2
- 12) Which compound shows maximum hydrogen bonding with water:
(A) CH_3OH (B) $C_5H_{11}OH$ (C) CH_3-O-CH_3 (D) C_6H_5OH
- 13) Iodoform is prepared by the reaction of Iodine with:
(A) Acetic acid (B) Formic acid (C) Acetone (D) Diethyl ether
- 14) Methyl Magnesium bromide combine with CO_2 to form
(A) Ethyl alcohol (B) Diethyl ether (C) Acetic acid (D) Acetone
- 15) Oils are glycerol esters which contain higher proportion of:
(A) Unsaturated hydro carbons components (B) Saturated hydro carbons components (C) Unsaturated fatty acid components (D) Saturated fatty acid components
- 16) Urea is a high quality nitrogeneous fertilizer. It contains about:
(A) 60% Nitrogen (B) 70% Nitrogen (C) 46% Nitrogen (D) 20% Nitrogen
- 17) Methane has a mean residence time of about years in the atmosphere:
(A) 2-5 years (B) 1-2 years (C) 3-7 years (D) 4-6 years

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Warning:- Please, do not write anything on this question paper except your Roll No.
1223 (Inter Part - II) (Session 2019-21 to 2021-23)

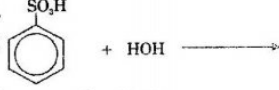
Chemistry (Subjective)
Time Allowed: 2.40 hours

(Group I)
SGD-12-1-23
Section ----- I

Paper (II)
Maximum Marks: 68

2. Answer briefly any Eight parts from the followings:-

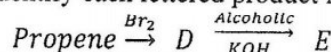
8 × 2 = 16

- (i) Give equation when borax is heated with NH_4Cl (ii) What is COD? Give its significance.
(iii) Give any four uses of Aluminium. (iv) Give the names and formulas of acids of Boron.
(v) What is Wurtz-Fittig reaction? (vi) Convert toluene into benzoic acid.
(vii) Give the importance of Lipids. (Four points). (viii) Complete the reaction:  + $\text{HOH} \longrightarrow$
(ix) What are isomerase enzymes? Give one example.
(x) Differentiate between DNA and RNA. (Two points). (xi) How water is purified by aeration? Discuss.
(xii) Give the role of atmosphere gases for sustaining life on earth.

3. Answer briefly any Eight parts from the followings:-

8 × 2 = 16

- (i) Why there is no free rotation around a double bond and a free rotation around a single bond?
(ii) How wood is transformed into coal? (iii) Identify each lettered product in the following reaction.



- (iv) Write the test to check unsaturation in the unsaturated hydrocarbons.
(v) Give two uses of ethyne. (vi) Why does aqua regia dissolve gold?
(vii) P_2O_5 is a powerful dehydrating agent. Prove it giving two examples.
(viii) Describe "Ring test" for the confirmation of presence of nitrate ions in solution.
(ix) What is β -elimination reaction? Give example.
(x) Give IUPAC names of the following compounds: a) $(\text{CH}_3)_2\text{CHBr}$ b) CH_2Cl_2
(xi) Name three principle methods of chemical pulping of paper.
(xii) Write names of four argillaceous raw materials used in manufacture of cement?

4. Answer briefly any Six parts from the followings:-

6 × 2 = 12

- (i) Describe chromyl chloride test. Write its equation.
(ii) Why does damaged tin plated iron get rusted quickly?
(iii) What are chelates? Give an example. (iv) Convert acetaldehyde into lactic acid.
(v) Ethanol gives different products with Conc. H_2SO_4 under different conditions. Write equations.
(vi) How is Bakelite prepared? Give its equation.
(vii) Write two reactions of ethanol involving the cleavage of O-H bond.
(viii) What is Fehling's solution test? Write its chemical equation.
(ix) How does CH_3COOH react with NaOH and NaHCO_3 ?

Section ----- II

(8 × 3 = 24)

Note: Attempt any three questions.

5. (a) What are Halides? Name their types by giving two properties of each type.
(b) How do carbonates and nitrates of Li differ from those of other Alkali metals.
6. (a) Write down the construction and working of Beckmann's method for manufacturing of bleaching powder.
(b) What is meant by "setting of cement". Describe the reactions involved in setting of cement during 1 to 7 days.
7. (a) What is hybridization? Describe the hybridization to explain the structure of alkynes in detail.
(b) Describe the mechanism of: (i) Halogenation of benzene. (ii) Sulphonation of benzene
8. (a) Describe the mechanism of Kolbe's electrolytic method for the preparation of alkyne.
(b) By using Grignard reagent prepare:
(i) Primary alcohol (ii) Secondary alcohol (iii) Ter. alcohol (iv) Alkane
9. (a) Explain the mechanism of the reaction of phenylhydrazine with acetone.
(b) Write down the mechanism of acetic acid and ammonia.

1226 -- 1223 -- 15000

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(Inter Part – II) (Session 2019-21 to 2021-23)

Sig. of Student -----

Chemistry (Objective) *SGD-12-2-23* Group – II

Paper (II)

Time Allowed:- 20 minutes

PAPER CODE 4488

Maximum Marks:- 17

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. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE**, which is printed on this question paper, on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

- 1) An element that has a high ionization energy and tends to be chemically inactive would most likely to be:
(A) An alkali metal (B) A transition element (C) A noble gas (D) A halogen
- 2) Group VI-B transition elements contains:
(A) Zn, Cd, Hg (B) Fe, Ru, Os (C) Cr, Mo, W (D) Mn, Te, Re
- 3) In t-butyl alcohol, the tertiary carbon is bonded to:
(A) Two hydrogen atoms (B) Three hydrogen atoms (C) One hydrogen atom (D) No hydrogen atom
- 4) Keeping in view the size of atoms, which order is the correct one?
(A) $Mg > Sr$ (B) $Ba > Mg$ (C) $Lu > Ce$ (D) $Cl > I$
- 5) Which ion will have the maximum value of heat of hydration?
(A) Na^+ (B) Cs^+ (C) Ba^{2+} (D) Mg^{2+}
- 6) Which element belongs to Group IV-A of the periodic table?
(A) Barium (B) Iodine (C) Lead (D) Oxygen
- 7) Laughing gas is chemically.
(A) NO (B) N_2O (C) NO_2 (D) N_2O_4
- 8) Formula of chloroform is:
(A) CH_3Cl (B) CCl_4 (C) CH_2Cl_2 (D) $CHCl_3$
- 9) Select the one which is a copolymer?
(A) Polythene (B) Polystyrene (C) Polyvinyl acetate (D) Nylon-6,6
- 10) Which one is frequently used to disinfect water?
(A) Sodium chloride (B) Hydrochloric acid (C) Chlorine (D) Sodium hydroxide
- 11) Diammonium phosphate fertilizer contains how much percentage of nitrogen?
(A) 48% (B) 16% (C) 75% (D) 46%
- 12) During nitration of benzene, the active nitrating agent is:
(A) NO_3 (B) NO_2^+ (C) NO_2 (D) HNO_3
- 13) The rate of $E1$ reaction depends upon:
(A) The concentration of substrate (B) The concentration of nucleophile (C) The concentration of substrate as well as nucleophile (D) None of the above
- 14) Rectified spirit contains ethyl alcohol about
(A) 80% (B) 85% (C) 90% (D) 95%
- 15) Which one is not an alcohol?
(A) CH_3OH (B) CH_3CH_2OH (C) $CH_3CH_2CH_2OH$ (D) CH_3COOH
- 16) Primary alcohols are formed when Grignard's reagent reacts with:
(A) Formaldehyde (B) Acetaldehyde (C) Acetone (D) Water
- 17) Acetic acid exists as _____ in benzene:
(A) A dimer (B) A trimer (C) A monomer (D) A tetramer

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SQP-12-2-23

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1223 (Inter Part - II) (Session 2019-21 to 2021-23)

Chemistry (Subjective)

(Group II)

Paper (II)

Time Allowed: 2.40 hours

Section ----- I

Maximum Marks: 68

2. Answer briefly any Eight parts from the followings:-

8 × 2 = 16

- (i) Give any two points of differences of carbon from its family members.
- (ii) Give chemistry of Borax bead test. (iii) What is chemical garden?
- (iv) Why -CH₃ group direct the incoming substituent at ortho and para position in toluene.
- (v) What is Wurtz-Fittig reaction for preparation of Alkyl aromatic Hydrocarbon.
- (vi) How did Kekulé support his theory about structure of benzene? Give two points.
- (vii) What are thermosetting polymers? Give two examples.
- (viii) What do you mean by hydrolysis? Support your answer with hydrolysis of lipids.
- (ix) What are carbohydrates? Name their types. (x) What are conditions for formation of smog?
- (xi) Mention two natural sources for release of methane in air.
- (xii) Give difference between primary and secondary pollutants with one example in each case.

3. Answer briefly any Eight parts from the followings:-

8 × 2 = 16

- (i) What are heterocyclic compounds? Give two examples. (ii) Why are organic reactions slow?
- (iii) What is Markownikov's rule? Give one example (iv) How is acetaldehyde produced from ethyne?
- (v) Why are alkanes called as paraffins? (vi) What is Ring test?
- (vii) Write down any four similarities between oxygen and sulphur. (viii) Write down any four uses of HNO₂
- (ix) How are anti-knocking agents produced from alkyl halides?
- (x) Differentiate between nucleophile and electrophile.
- (xi) Differentiate between micro-nutrients and macro-nutrients?
- (xii) Enlist different stages for manufacturing of cement by wet process?

4. Answer briefly any Six parts from the followings:-

6 × 2 = 12

- (i) How are chromate ions converted into dichromate ions?
- (ii) What will happen when potassium dichromate react with (a) KI (b) FeSO₄
- (iii) Define the co-ordination sphere with one example.
- (iv) Write the two reactions of alcohol in which 'O-H' bond is broken.
- (v) What do you know about Williamson's synthesis?
- (vi) How will you convert methanol into ethanol.
- (vii) Starting from aldehyde prepare Metaformaldehyde and Paraldehyde.
- (viii) Write the Fehling solution test. (ix) Write down the mechanism of the reaction of acetic acid and ammonia.

Section ----- II

(8 × 3 = 24)

Note: Attempt any three questions.

5. (a) What are hydrides? Discuss their classification.
- (b) Explain the peculiar behaviour of Lithium (Give eight points).
6. (a) Write down the reactions of chlorine with cold and hot NaOH
- (b) What are fertilizers? Write any four essential qualities of good fertilizer.
7. (a) Define orbital hybridization. Explain sp² hybridization with the structure of ethene.
- (b) What is Friedel Crafts acylation? Explain its mechanism.
8. (a) Write structural formulae of the following compounds.
- (i) 3-Ethylpentane. (ii) 2,2,3,4- tetramethyl pentane.
- (iii) 2,2-Dimethylbutane. (iv) 4-Ethyl-3,4-dimethylpentane.
- (b) Draw eight possible structures that have the molecular formula C₆H₁₃Cl and also classify them.
9. (a) Write a detailed note on Cannizzaro's reaction.
- (b) Give the reaction of CH₃COOH with SOCl₂. Also give mechanism.

1228 -- 1223-- 10000

Roll No. of Candidate : 

CHEMISTRY

Intermediate Part-II, Class 12th (1stA 423-I) Paper: II Group - I

Time: 20 Minutes

OBJECTIVE Code: 8481 Gvj-12-1-23 Marks: 17

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. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

1. Keeping in view atomic and ionic radii, mark the correct statement
(A) $\text{Na}^+ < \text{Na}$ (B) $\text{Cl}^- < \text{Cl}$ (C) $\text{Cl}^- = \text{Cl}$ (D) $\text{Na}^+ > \text{Na}$
2. Chile Saltpeter has the chemical formula
(A) KNO_2 (B) NaNO_3 (C) $\text{Na}_2\text{B}_4\text{O}_7$ (D) $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$
3. The element belongs to group IV-A of the periodic table
(A) Barium (B) Iodine (C) Lead (D) Oxygen
4. Laughing gas is chemically
(A) NO (B) N_2O (C) N_2O_4 (D) NO_2
5. The anhydride of HClO_4 is
(A) ClO_3 (B) ClO_2 (C) Cl_2O_5 (D) Cl_2O_7
6. Which of the following is a typical transition metal?
(A) Sc (B) Y (C) Ra (D) Co
7. A double bond consists of
(A) two sigma bonds (B) two pi bonds
(C) one sigma and one pi bond (D) one sigma and two pi bonds
8. Formula of chloroform is
(A) CH_3Cl (B) CCl_4 (C) CHCl_3 (D) CH_2Cl_2
9. The electrophile in aromatic sulphonation is
(A) H_2SO_4 (B) HSO_4^{-1} (C) SO_3 (D) SO_3^+
10. Which one of the following is not a nucleophile?
(A) H_2O (B) BF_3 (C) NH_3 (D) H_2S
11. The ethanol can be converted into ethanoic acid by
(A) Hydrogenation (B) Hydration (C) Oxidation (D) Fermentation
12. Carbolic acid is the other name of
(A) phenol (B) toluene (C) nitrobenzene (D) aniline
13. 40% aqueous solution of formaldehyde is called as
(A) formalin (B) Tollen's Reagent (C) paraldehyde (D) wood spirit
14. Histidine is an amino acid
(A) acidic (B) basic (C) amphoteric (D) neutral
15. PVC is a polymer
(A) thermosetting (B) thermoplastic (C) autsetting (D) wet setting
16. The % age of nitrogen in NH_3 is
(A) 82 (B) 81 (C) 80 (D) 88
17. Ozone layer is present in
(A) troposphere (B) thermosphere (C) stratosphere (D) mesosphere

316-(I)-1stA 423-26000

Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

SECTION - I**2. Write short answers to any EIGHT questions.****(2 x 8 = 16)**

- Why CO₂ is gas at room temperature while SiO₂ solid?
- Give any four uses of boric acid.
- Give reaction of H₃BO₃ with C₂H₅OH.
- Convert benzene into toluene.
- Give x-ray structure of benzene.
- What are polyester resins? Give uses.
- Convert sodium benzoate into benzene.
- How protein is denatured? Give one example.
- Give hydrolysis reaction of triglycerides.
- How is oil spillage affecting the marine life?
- What is ozone hole? Give comments.
- What are primary and secondary pollutants? Give examples.

3. Write short answers to any EIGHT questions.**(2 x 8 = 16)**

- Write down the structural formulas of two possible isomers of C₄H₁₀.
- What are heterocyclic compounds? Give one example.
- Identify each lettered product of the reaction. Ethylalcohol $\xrightarrow{\text{conc. H}_2\text{SO}_4}$ A $\xrightarrow{\text{Br}_2}$ B
- Why alkenes are more reactive than alkanes?
- What is Raney nickel? How is it prepared?
- What is the effect of heat on solid N₂O₄?
- Why the elements of group VI-A other than Oxygen show more than two oxidation states?
- Complete and balance the following equations
 $\text{P} + \text{NO} \longrightarrow ?$
 $\text{HNO}_2 + \text{CO}(\text{NH}_2)_2 \longrightarrow ?$
- How will you carry out the following conversion?
 $\text{CH}_3 - \text{CH}_3 \longrightarrow (\text{CH}_3 - \text{CH}_2)_4 \text{N}^+ \text{Br}^-$
- Differentiate between nucleophile and electrophile.
- What are common bleaching agents used in paper industry?
- What are fertilizers?

4. Write short answers to any SIX questions.**(2 x 6 = 12)**

- What is co-ordination number? Give its example.
- Fe³⁺ shows maximum paramagnetic behavior. Justify it.
- Ethanol has higher boiling point than diethyl ether. Give reason.
- How is ethanol prepared from molasses?
- Write down mechanism of reaction between C₂H₅OC₂H₅ and HI.

(Turn Over)

- vi. Write down names and formulas of two ores of iron.
- vii. Write down two tests to differentiate between carbonyl and non-carbonyl compounds.
- viii. Show the dry distillation of a mixture of calcium salts of formic acid and acetic acid.
- ix. Draw structures of phthalic acid and malonic acid.

SECTION - II

Note: Attempt any THREE (3) questions.

5. (a) Define oxidation state. Write down its variation trends in modern periodic table. (4)
(b) Describe the peculiar behaviour of beryllium. (4)
6. (a) What happens when bleaching powder reacts with (i) dil. H_2SO_4 (ii) Conc. H_2SO_4 (4)
(iii) NH_3 (iv) HCl
(b) Write essential qualities of good fertilizer. (4)
7. (a) Define cracking of petroleum. Also discuss catalytic and steam cracking. (4)
(b) Write down a note on stability of benzene. (4)
8. (a) How does ethyne react with (i) Halogen acid (ii) Alkaline $KMnO_4$ (4)
(iii) Ammonical cuprous Chloride (iv) 10% H_2SO_4 in the presence of $HgSO_4$
(b) Define nucleophilic substitution reactions? Explain SN_1 mechanism in detail. (4)
9. (a) Write down a note on aldol condensation in detail. (4)
(b) Write down a note on peptides and proteins in detail. (4)

316-1stA 423-26000

Roll No. of Candidate : _____

CHEMISTRY

Intermediate Part-II, Class 12th (1st A 423- IV) Paper: II Group – II

Time: 20 Minutes

OBJECTIVE Code: 8488

Marks: 17

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. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

1. Phosphorus helps the growth of
(A) root (B) leave (C) stem (D) seed
2. Which set of hybrid orbital has linear shape ?
(A) sp^3 (B) sp^2 (C) sp (D) dsp^2
3. The electrophile in aromatic sulphonation is
(A) H_2SO_4 (B) H^+SO_4 (C) SO_3 (D) SO_3^+
4. Which is neutral amino acid ?
(A) lysine (B) glycine (C) histidine (D) glutamic acid
5. Vinyl acetylene combines with HCl to form
(A) polyacetylene (B) benzene (C) chloroprene (D) divinyl acetylene
6. Which of the following sulphate is not soluble in water ?
(A) Sodium Sulphate (B) Potassium Sulphate (C) Zinc Sulphate (D) Barium Sulphate
7. The carbon atom of carbonyl group is
(A) sp – hybridized (B) sp^2 – hybridized (C) sp^3 – hybridized (D) dsp^2 – hybridized
8. Aluminium oxide is
(A) acidic (B) basic (C) amphoteric (D) neutral
9. Mark the correct statement
(A) Na^+ is smaller than Na atom (B) Na^+ is larger than Na atom
(C) Cl^- is smaller than Cl atom (D) Cl^- ion and Cl atom are equal in size
10. Which catalyst is used in contact process ?
(A) Fe_2O_3 (B) V_2O_5 (C) NO (D) SO_3
11. The strength of binding energy of transition elements depends upon
(A) number of electron pairs (B) number of unpaired electrons
(C) number of neutrons (D) number of protons
12. Which of these polymers is a synthetic polymer ?
(A) animal fat (B) starch (C) cellulose (D) polyester
13. Which compound is called a universal solvent ?
(A) H_2O (B) C_2H_5OH (C) $CH_3 - O - CH_3$ (D) CH_3OH
14. The anhydride of $HClO_4$ is
(A) ClO_3 (B) ClO_2 (C) Cl_2O_5 (D) Cl_2O_7
15. Ecosystem is a smaller unit of
(A) biosphere (B) lithosphere (C) hydrosphere (D) atmosphere
16. Elimination bimolecular reaction is
(A) zero order reaction (B) first order reaction
(C) second order reaction (D) third order reaction
17. Methyl alcohol is not used
(A) as a solvent (B) as an antifreezing agent
(C) as a substitute for petrol (D) for denaturation of ethyl alcohol

317-(IV)- 1st A 423-26000

CHEMISTRYIntermediate Part-II, Class 12th (1st A 423) Paper: II

Group – II

Time: 2:40 Hours

SUBJECTIVE

Guj-12-2-23

Marks: 68

Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.**SECTION – I****2. Write short answers to any EIGHT questions.****(2 x 8 = 16)**

- i. Describe the preparation of borax from boric acid.
- ii. What is chemical garden?
- iii. Write down the chemistry of borax-bead test.
- iv. Convert benzene into hexabromocyclohexane.
- v. Describe Wurtz-Fitting reaction.
- vi. Write down the mechanism of Friedel-Crafts acylation.
- vii. What is saponification of fat? Write down its equation.
- viii. How is PVC (polyvinyl chloride) formed? Write down its equation.
- ix. Draw the structure of cellulose.
- x. Define BOD. How is it measured?
- xi. Mention any two health problems caused by ozone.
- xii. How is oil spillage affecting the marine life?

3. Write short answers to any EIGHT questions.**(2 x 8 = 16)**

- i. Define functional groups. Write down the name of any two nitrogen containing functional groups.
- ii. What is vital force theory? Who rejected it?
- iii. Differentiate between saturated and unsaturated hydrocarbons.
- iv. Why sigma bond is inert?
- v. How can ethyne be produced from calcium carbide?
- vi. How does aqua regia dissolve gold?
- vii. Why is nitrogen trivalent but phosphorus has variable oxidation state?
- viii. How is PCl_3 produced from $SOCl_2$?
- ix. Which is the best method for preparation of alkyl halides from alcohols?
- x. What is meant by β -elimination reaction?
- xi. Define the term fertilizers.
- xii. Write down any two woody and two non-woody raw materials for paper manufacturing.

4. Write short answers to any SIX questions.**(2 x 6 = 12)**

- i. Give the reaction of chromyl chloride test.
- ii. Define chelates. Give one example.
- iii. Give four properties of transition elements.
- iv. How methanol is prepared in laboratory? Give reaction.
- v. Convert phenol into cyclohexanol.

**(Turn Over)**

- vi. Give reaction of $C_2H_5OC_2H_5$ with HI.
- vii. What is formalin? How is it formed?
- viii. Give any four uses of formaldehyde.
- ix. Convert acetic acid into ethane.

SECTION - II

Note: Attempt any THREE (3) questions.

- 5. (a) How does classification of elements in different blocks help in understanding their chemistry. (4)
(b) Describe the commercial preparation of sodium hydroxide by the diaphragm cell. (4)
- 6. (a) How is bleaching powder prepared by Beckmann's method? 1x4 (4)
(b) Describe different zones of the rotary kiln of manufacture of cement. 1x4 (4)
- 7. (a) What is octane number? How can it be improved? (4)
(b) Describe atomic orbital treatment of benzene. (4)
- 8. (a) Write down a note on halogenation of alkane. 2+2 (4)
(b) Explain the following terms by giving suitable examples 1+3 (4)
(i) Nucleophile (ii) Electrophile
(iii) Leaving group (iv) Substrate
- 9. (a) Explain the mechanism of addition of sodium bisulphite to acetone. (4)
(b) Write down the mechanism for reaction of acetic acid and ethanol. (4)

317-1stA 423-26000