Chemistry	(B)	L.K.No. 1465	Paper Code No. 8483
Paper II	(Objective Type)	Inter (1st – A – Exam 2024)	
Time :	20 Minutes	Inter (Part - II)	(Group Ist)
Marks :	17	Session (2020 – 22) to (2022 – 24)	

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

Q.No.1 (1)	Reducing Smog contains high concentration of : (A) O_3 (B) NO (C) SO_2 ● (D) H_2O_2
(2)	Peroxyacetylnitrate (PAN) is an irritant to human beings and it affects : (A) Eyes ● (B) Ears (C) Stomach (D) Nose
(3)	Which woody raw material is used for the manufacture of Paper Pulp : (A) Cotton (B) Bagasse (C) Poplar ● (D) Rice Straw
(4)	Which one of the following elements is not present in all Proteins : (A) Carbon (B) Sulphur ● (C) Nitrogen (D) Hydrogen
(5)	Which Acid is used in the manufacture of synthetic fibre : (A) Formic Acid (B) Oxalic Acid (C) Carbonic Acid (D) Acetic Acid ●
(6)	Cannizzaro's reaction is not given by : (A) Formaldehyde (B) Acetaldehyde (C) Benzaldehyde (D) Trimethyl Acetaldehyde
(7)	Which Enzyme is not involved in the Fermentation process : (A) Diastase (B) Zymase (C) Urease ● (D) Invertase
(8)	The removal of two atoms or groups from adjacent Carbon atoms in the presence of a base is called : (A) Substitution Reaction (B) Elimination Reaction ● (C) Hydrolytic Reaction (D) Decomposition Reaction
(9)	Aromatic Hydrocarbons are the derivative of : (A) Normal series of Paraffins (B) Alkene (C) Benzene (D) Cyclohexane
(10)	Preparation of vegetable ghee involves : (A) Halogenation (B) Hydrogenation (C) Hydroxylation (D) Dehydrogenation
(11)	Which Set of Hybrid Orbitals has Planar Triangular Shape : (A) sp^3 (B) sp (C) sp^2 (D) dsp^2
(12)	The Colour of Transition Metal Complexes is due to : (A) d – d Transition of electrons ● (B) Ionization (C) Paramagnetic nature of Transition Elements (D) Loss of s – electrons
(13)	The Anhydride of $HClO_4$ is : (A) ClO_3 (B) ClO_2 (C) Cl_2O_5 (D) Cl_2O_7 ●
(14)	TNT is formed by the reaction of Nitric Acid with : (A) Phenol (B) Toluene (C) Glycerol (D) Aniline
(15)	Which Metal is used in Thermite Process because of its activity : (A) Iron (B) Copper (C) Aluminium (D) Zinc
(16)	Chile Saltpetre has the Chemical Formula : (A) $NaNO_3$ (B) KNO_2 (C) $Na_2B_4O_7$ (D) $Na_2CO_3 . H_2O$
(17)	Beryllium Oxide is an example of : (A) Acidic Oxide (B) Basic Oxide (C) Amphoteric Oxide (D) Peroxide

Roll No.	1465 - 15000	Inter (Part – II)	Session (2020 – 22) to (2022 – 24)
Chemistry (Subjective)	Inter (Ist – A – Exam – 2024)	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

22 x 2 = 44

Q.No.2	(i)	Give the two points of similarity between Hydrogen and Alkali Metals.		
	(ii)	Define Hydration Energy. Give the factors affecting it.		
	(iii)	Write down two Characteristics of Lipids.	(iv)	How is Lime Mortar prepared?
	(v)	How the Chromate Ions are converted into Dichromate Ions? Give the reaction involved.	(vi)	Differentiate between Paramagnetic and Diamagnetic substances.
	(vii)	How Grignard Reagent is prepared? Why is it very reactive?	(viii)	Give the two points of difference between S_N1 and S_N2 reactions.
	(ix)	How is Polyvinyl Chloride prepared? Give its two uses.	(x)	Why is the Aqueous Solution of Na_2CO_3 Alkaline in nature?
	(xi)	Give the effect of temperature on Enzyme activity.	(xii)	Give the reactions taking place between 1–7 days in setting of Cement.
Q.No.3	(i)	Why does Aqua Regia dissolve Gold and Platinum?	(ii)	Write down comparison of properties of Oxygen and Sulphur (any two).
	(iii)	What are Freons and Teflon?	(iv)	Name the Gas used for Earthquake Prediction.
	(v)	What is the role of Homologous Series in Organic Compounds ?	(vi)	Why the rates of Organic Reactions are slow?
	(vii)	How Methane is converted into HCHO in the presence of Catalyst (Cu) under high Temperature and Pressure?	(viii)	Describe Markownikov 's Rule for the Addition of HX to Alkene.
	(ix)	Why Terminal Alkynes are acidic in nature? Give example.	(x)	What is the role of CFCs in destroying Ozone layer?
	(xi)	Define Dissolved Oxygen (DO) for the quality of Water.	(xii)	Describe Harmful effects of Chlorination of Water.
Q.No.4	(i)	What happens when Borax is heated with H_2SO_4 ?		
	(ii)	How does Aluminium reacts with H_2SO_4 and N_2 ?		
	(iii)	What is Asbestos? Give its uses.		
	(iv)	What is Wurtz Fittig Reaction?		
	(v)	Write the Structural Formula and names of two Hydroxy Acids.		
	(vi)	How will you prepare Ethanol from Starch?		
	(vii)	What is Canizaro's Reaction? Give one example.		
	(viii)	How α – Hydroxy Carboxylic Acid are prepared from Amino Acid?		
	(ix)	Write reaction of Ethyne with Water for formation of Acetic Acid.		

(Part – II)

3 x 8 = 24

Q.No.5	(a)	Justify the Position of Hydrogen with group I – A elements.	(4)
	(b)	Lithium shows peculiar behaviour. Mention any eight points.	(4)
Q.No.6	(a)	Explain Peculiar behaviour of Flourine differ from other Halogens.	(4)
	(b)	What are Phosphatic Fertilizers and their importance with respect to Diammonium Phosphate?	(4)
Q.No.7	(a)	Define sp^2 Hybridization. Discuss it with a suitable example along with labelled diagram.	(4)
	(b)	How can you Prepare the following from Ethyl Chloride : (i) Propane Nitrile (ii) n – Butane (iii) Tetraethyl Lead (iv) Ethane	(4)
Q.No.8	(a)	Why Acetylene and Terminal Alkynes give acidic behaviour ? Give their evidences.	(4)
	(b)	How Acetaldehyde reacts with : (i) H_2NOH (ii) H_2N-NH_2 (iii) 2 , 4 – DNPH (iv) Phenyl Hydrazine.	(4)
Q.No.9	(a)	Give detail mechanism for the preparation of Acetophenone through Friedel Crafts Acylation reaction.	(4)
	(b)	How is Methyl Alcohol obtained on large Scale? How can it be distinguished from Ethyl Alcohol?	(4)

Chemistry	(A)	L.K.No. 1466	Paper Code No. 8482
Paper II	(Objective Type)	Inter (Ist – A – Exam 2024)	
Time :	20 Minutes	Inter (Part - II)	(Group 2nd)
Marks :	17	Session (2020 – 22) to (2022 – 24)	

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

Q.No.1 (1)	Chile Saltpetre has the Chemical Formula : (A) $NaNO_3$ (B) KNO_3 (C) $Na_2B_4O_7$ (D) $Na_2CO_3 . H_2O$
(2)	Which element forms an Ion with charge +3 : (A) Beryllium (B) Aluminium (C) Carbon (D) Silicon
(3)	Anhydride of $HClO_4$ is : (A) ClO_3 (B) ClO_2 (C) Cl_2O_5 (D) Cl_2O_7
(4)	Which of the following is a Typical Transition Metal : (A) Sc (B) Y (C) Ra (D) Co
(5)	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
(6)	Which one of the following Gases is used for Artificial Ripening of Fruits : (A) Ethene (B) Ethyne (C) Methane (D) Propane
(7)	The Conversion of n – Hexane into Benzene by heating in the Presence of Pt is called : (A) Isomerization (B) Rearrangement (C) De Alkylation (D) Aromatization
(8)	Elements of the Periodic Table are classified into blocks : (A) Four (B) Three (C) Five (D) Six
(9)	Sulphuric Acid acts as a Dehydrating agent in reaction with : (A) Formic Acid (B) Zinc (C) Copper (D) Sodium Hydroxide
(10)	The removal of two atoms or groups from adjacent Carbon atoms in the presence of a base is called : (A) Substitution Reaction (B) Elimination Reaction (C) Hydrolytic Reaction (D) Decomposition Reaction
(11)	Unpolluted Rain Water has a pH of : (A) 4 . 9 (B) 5 . 6 (C) 5 . 3 (D) 7 . 0
(12)	Newspaper can be recycled again and again by how many times : (A) 2 (B) 3 (C) 4 (D) 5
(13)	The Enzyme not involved in Fermentation of Starch : (A) Diastase (B) Zymase (C) Urease (D) Invertase
(14)	Cannizzaro's reaction is not given by : (A) Formaldehyde (B) Acetaldehyde (C) Benzaldehyde (D) Triethyl Acetaldehyde
(15)	Which reagent is used to reduce a Carboxylic group to an Alcohol : (A) H_2 / Ni (B) H_2 / Pt (C) $NaBH_4$ (D) $LiAlH_4$
(16)	Which one of the following Enzymes brings about the Hydrolysis of Fats : (A) Urease (B) Maltase (C) Zymase (D) Lipase
(17)	Phosphorus helps the growth of : (A) Roots (B) Leave (C) Stem (D) Seed

Roll No.	1466 - / 5000	Inter (Part – II)	Session (2020 – 22) to (2022 – 24)
Chemistry (Subjective)	Inter (Ist – A – Exam – 2024)	(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

22 x 2 = 44

Q.No.2	(i)	The Oxidation State vary in a period but remain almost constant in a group. Write reason briefly.		
	(ii)	Define Shielding Effect.		
	(iii)	Why is 2% Gypsum added in the Cement?	(iv)	BeO is Amphoteric . Prove it.
	(v)	Why Fe^{+3} shows maximum Paramagnetic behaviour among first Transition Series?	(vi)	What is Chromyl Chloride test? Give equation also.
	(vii)	What is Wurtz Synthesis ? Give equation also.	(viii)	How Propanoic Acid is prepared from Ethyl Magnesium Bromide ? Give equation.
	(ix)	Define Iodine Number.	(x)	Differentiate between Ligases and Lyases.
	(xi)	Write down any two importance of Proteins.	(xii)	Why Phosphatic Fertilizers are provided to plants?
Q.No.3	(i)	Complete and balance the following Chemical equations : (a) $P + NO \rightarrow ?$ (b) $NO + Cl_2 \rightarrow ?$	(ii)	P_2O_5 is a powerful Dehydrating Agent . Prove it giving example.
	(iii)	Arrange the following ions in order of increasing size : F^-, Cl^-, I^-, Br^-.	(iv)	What is " Iodized Salt " ?
	(v)	What is the Composition of Natural Gas? Give its use.	(vi)	Why there is no free Rotation around a Carbon – Carbon double bond?
	(vii)	Why Ethene is more reactive than Ethane?	(viii)	How to Prepare good quality Polythene?
	(ix)	Convert : Propyne → Acetone .	(x)	What is Oxidizing Smog?
	(xi)	How to measure the quality of Water naturally?	(xii)	What are the Harmful effects of Chlorination of water?
Q.No.4	(i)	How does Borax serve as a Water Softening Agent?		
	(ii)	Give names alongwith the formulas of three important ores of Aluminium.		
	(iii)	Describe Four important uses of Silicates.		
	(iv)	What is the difference between Ortho – Para and Meta Directing Groups in the Mono- Substituted Benzene Ring?		
	(v)	What is the difference between Rectified Spirit and Absolute Alcohol?		
	(vi)	Write IUPAC names of the following Compounds : (a) $(CH_3)_3 COH$ (b) $(CH_3)_2 CHCH_2OH$		
	(vii)	Give General Mechanism of the Acid Catalyzed Nucleophilic Addition Reaction of Aldehydes and Ketones.		
	(viii)	What are Peptides ? How are Dipeptides formed?		
	(ix)	What happens when Calcium Acetate is Heated?		

(Part – II)

3 x 8 = 24

Q.No.5	(a)	Mention four points of similarity of Hydrogen each with Alkali Metals and Halogens.	2+2=4
	(b)	Describe with labelled diagram the manufacture of Sodium Hydroxide by Diaphragm Cell.	(4)
Q.No.6	(a)	What is Bleaching Powder? How can it be prepared by Beckmann's method?	(4)
	(b)	How Urea is manufactured? Give the reactions involved.	(4)
Q.No.7	(a)	What is Cracking of Petroleum and discuss its different types?	(4)
	(b)	Explain S_N1 Reaction with Complete Mechanism.	(4)
Q.No.8	(a)	Explain the MarkowniKov 's Rule with reaction mechanism. (1 + 3) =	(4)
	(b)	What is Aldol Condensation ? Why Acetaldehyde give this reaction ? Justify your answer with mechanism. (1 + 3) =	(4)
Q.No.9	(a)	Write down the mechanism of : (i) Friedel Craft Alkylation (ii) Friedel Craft Acylation	(4)
	(b)	How Lucas Test is used to identify Primary , Secondary and Tertiary Alcohol?	(4)

PAPER CODE – 8485

12th CLASS – 1st Annual 2024

CHEMISTRY		TIME : 20 MINUTES
GROUP : FIRST		MARKS :17

OBJECTIVE

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 marks in that question.

QUESTION NO. 1

1 Planar triangular shape is associated with which set of hybrid orbitals

(A) sp^3 (B) sp (C) sp^2 ● (D) dsp^2

2 Formula of chloroform is

(A) CH_3Cl (B) CCl_4 (C) CH_2Cl_2 (D) $CHCl_3$ ●

3 During nitration of benzene , the active nitrating agent is

(A) NO_3 (B) NO_2^+ (C) NO_2 ● (D) HNO_3

4 When Ethanol ($CH_3 - CH_2 - OH$) is made to react with ethyl magnesium bromide the product formed is

(A) CH_4 (B) $CH_2 = CH_2$ (C) C_2H_2 (D) $CH_3 - CH_3$ ●

5 Which compound is called a universal solvent ?

(A) H_2O ● (B) CH_3OH (C) C_2H_5OH (D) $CH_3 - O - CH_3$

6 One of the following compounds will react with Tollen's reagent.

(A) $CH_3-\overset{\overset{O}{\|}}{C}-H$ ● (B) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$ (C) $CH_3-\overset{\overset{O}{\|}}{C}-OH$ (D) $CH_3-\overset{\overset{O}{\|}}{C}-CH_2-CH_3$

7 One of the following is not a fatty acid

(A) Acetic acid (B) Propanoic acid (C) Butanoic acid (D) Phthalic acid ●

8 Which one of the following enzymes brings about the hydrolysis of fats ?

(A) Urease (B) Maltase (C) Lipase ● (D) Zymase

9 Which is not a calcarious material ?

(A) Lime (B) Clay ● (C) Marble (D) Marine Shell

10 Disinfection of chlorine is

(A) Inexpensive (B) Expensive (C) Rapid ● (D) Slow

11 Ecosystem is a smaller unit of

(A) Lithosphere (B) Hydrosphere (C) Atmosphere (D) Biosphere ●

12 Select the two normal elements are present in Fifth period

(A) Rb , Sr ● (B) Cs , Ba (C) Fr , Ra (D) La , Hf

13 The mineral ($CaSO_4 . 2H_2O$) has the general name

(A) Gypsum ● (B) Dolomite (C) Calcite (D) Epsom salt

14 One of the element forms an ion with charge 3+

(A) Beryllium (B) Aluminium ● (C) Carbon (D) Silicon

15 Choose the gas which is obtained by the reaction of Formic acid with conc: H_2SO_4

(A) C_2H_2 (B) C_2H_4 (C) CO_2 ● (D) CO

16 One of the halogen occurs naturally in a positive oxidation state

(A) Fluorine (B) Chlorine (C) Iodine ● (D) Bromine

17 Group VI – B of transition elements contains

(A) Zn , Cd , Hg (B) Cr , Mo , W ● (C) Fe , Ru , Os (D) Mn , Te , Re

CHEMISTRY		TIME: 2 HRS 40 MINUTES
GROUP : FIRST	SUBJECTIVE PART SECTION – I	MARKS: 68

QUESTION NO. 2 Write short answers any Eight (8) of the following 16

i	Why alkali metals are very reactive ?
ii	What are the s – block elements and why are they called so ?
iii	How do transition elements display colours ?
iv	K_2CrO_4 and $K_2Cr_2O_7$ show similar properties. Justify this.
v	How does brown pulp converted into white pulp in paper industry ?
vi	Give formula of (i) Dolomite (ii) Natron
vii	What will happen when Lithium Hydride is treated with water.
viii	Starting from (primary) alkyl halide prepare ethylamine
ix	How the molecular mass of polymer is determined ?
x	What is starch ? Write its two uses.
xi	What are lipids ? What is their importance ?
xii	How Grignard reagent react with CH_3CHO ?

QUESTION NO. 3 Write short answers any Eight (8) of the following 16

i	Why is SO_3 dissolved in H_2SO_4 and not in H_2O ?
ii	Write down any four uses of HNO_3
iii	What are Freons and Teflon ?
iv	Write down any four applications of noble gases.
v	What are alicyclic compounds ? Give its two examples.
vi	Define knocking. How does it improve ?
vii	How formaldehyde is prepared from ethene ?
viii	How acetylene is prepared on industrial scale ?
ix	Why alkanes are less reactive ?
x	Differentiate between oxidizing and reducing smog.
xi	How chlorofluorocarbons destroy ozone ?
xii	What is dissolved oxygen ?

QUESTION NO. 4 Write short answers any Six (6) of the following 12

i	What is the Chemistry of Borax – bead Test ?
ii	Write down any two uses of Aluminium.
iii	Why are liquid silicones preferred over ordinary organic lubricants ?
iv	What are the major products of bromination of the following compounds? (a) Toluene (b) Benzaldehyde
v	Ethanol gives different products with conc H_2SO_4 under different conditions , give reactions.
vi	Write IUPAC names of the following compounds. (a) $(CH_3)_2$ CH – OH (b) $(CH_3)_2$ CH CH_2 OH
vii	Why formaldehyde does not give aldol condensation reaction ?
viii	What is internal salt of amino acids ?
ix	Write down the reaction of acetic acid with ammonia and its product on heating.

SECTION-II

Note: Attempt any Three questions from this section 8 x 3 = 24

Q.5.(A)	Discuss the position of hydrogen in a periodic table with IV A group elements.
(B)	How is sodium prepared commercially by Down's Cell ?
Q.6.(A)	Write down four uses of Chlorine in daily life.
(B)	Explain preparation of urea fertilizer on large scale.
Q.7.(A)	Define atomic orbital hybridization. Explain sp hybridization with formation of ethyne.
(B)	Explain the mechanism of SN_1 reactions.
Q.8.(A)	How will you prepare from ethyne. (i) Acetaldehyde (ii) Oxalic acid (iii) Benzene (iv) chloroprene
(B)	How will you prepare from Acetaldehyde (i) Lactic acid (ii) Acetal
Q.9.(A)	Discuss the nitration of benzene with reaction mechanism.
(B)	How will you identify 1 – propanol , 2 – propanol and 2 – methyl – 2 – propanol ? Justify the answer with chemical test.

OBJECTIVE

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 marks in that question.

QUESTION NO. 1

1 Which of the following is not a fatty acid ?
(A) Propanoic acid (B) Acetic acid (C) Phthalic acid ● (D) Butanoic acid

2 A polymeric substance that is formed in a liquid state and then hardened to a rigid solid is called a
(A) Fibre (B) Plastic ● (C) Varnish (D) Polyamide resins

3 Which is not a calcarious material ?
(A) Lime (B) Clay ● (C) Marble (D) Marine shell

4 The main pollutant of leather tanneries in the waste water is due to the salt of
(A) Lead (B) Chromium (VI) ● (C) Copper (D) Chromium (III)

5 The capacity of organic matter in natural water to consume oxygen within a period of five days is called
(A) DO (B) BOD ● (C) COD (D) PAN

6 Coinage metals are
(A) Ni , Pd , Pt (B) Cu , Ag , Au ● (C) As , Al , Pd (D) Fe , Si , Sn

7 Which element is deposited at cathode during the electrolysis of brine in diaphragm cell ?
(A) H_2 ● (B) Na (C) Cl_2 (D) O_2

8 The chief ore of Aluminium is
(A) Na_3AlF_6 (B) $Al_2O_3 . 2H_2O$ ● (C) Al_2O_3 (D) $Al_2O_3 . H_2O$

9 Nitrous acid reacts with aminobenzene to produce
(A) Urea (B) Phenol ● (C) Toluene (D) NH_3

10 Which of the following represents the correct electronic configuration of the outermost energy level of an element of zero (VIII A) group in the ground state ?
(A) s^2p^2 (B) s^2p^4 (C) s^2p^5 (D) s^2p^6 ●

11 Coordination number of Pt in [Pt Cl (NO_2) $(NH_3)_4$] is
(A) 2 (B) 4 (C) 1 (D) 6 ●

12 Select from the following the one which is alcohol
(A) $CH_3 - CH_2 - OH$ ● (B) $CH_3 - O - CH_3$ (C) CH_3COOH (D) $CH_3 - CH_2 - Br$

13 The formula of chloroform is
(A) CH_3Cl (B) CCl_4 (C) CH_2Cl_2 (D) $CHCl_3$ ●

14 During nitration of benzene , the active nitrating agent is
(A) NO_2 (B) NO_2^+ ● (C) NO_2^- (D) HNO_3

15 Which reagent does not produce ethane by reacting with ethyl magnesium chloride in the presence of dry ether ?
(A) H_2O (B) NH_3 (C) HCHO ● (D) C_2H_5OH

16 Which compound will have maximum repulsion with water ?
(A) C_6H_6 ● (B) C_2H_5OH (C) CH_3OCH_3 (D) CH_3CH_2OH

17 Which of the following reagents will react with both aldehydes and ketones ?
(A) Grignard reagent ● (B) Fehling's reagent (C) Benedict's reagent (D) Tollen's reagent

CHEMISTRY		TIME: 2 HRS 40 MINUTES
GROUP : SECOND	SUBJECTIVE PART SECTION – I	MARKS: 68

QUESTION NO. 2 Write short answers any Eight (8) of the following **16**

i	Why diamond is a non – conductor but graphite is a fairly good conductor ?
ii	Define ionization energy. How does it vary in the periodic table ?
iii	Why 2% gypsum is added to Cement ?
iv	Give the formula of (i) Asbestos (ii) Soapstone (Talc)
v	How does the process of galvanizing or Zinc Coating protect the iron from rusting ?
vi	How is the chromate ions converted into dichromate ions. Give the reaction involved.
vii	Give the two factors which govern the reactivity of alkyl halides.
viii	How propanoic acid is prepared from Ethyl magnesium Bromide ?
ix	What are thermoplastic polymers. Give two examples.
x	Define polysaccharides. Give two examples
xi	How the proteins are denatured ?
xii	Define lignin. Why is it removed from pulp ?

QUESTION NO. 3 Write short answers any Eight (8) of the following **16**

i	Why the elements of Group **VIA** other than oxygen shows more than two oxidation states ?
ii	What is meant by Fuming Nitric acid ?
iii	Arrange F^- , Cl^- , I^- , Br^- in order of decreasing size.
iv	Name the Halogen used in water treatment.
v	Draw flow sheet diagram for the formation of Anthracite.
vi	Differentiate between petroleum and crude oil.
vii	How will you synthesize Acetaldehyde from C_2H_2 ?
viii	Compare the reactivity of ethane and ethene.
ix	Describe polymerization of ethene.
x	Define Biochemical Oxygen Demand (BOD) for the quality of water.
xi	Describe how pesticides are dangerous to humans ?
xii	Describe Reprocessing for the Recycling of Plastics.

QUESTION NO. 4 Write short answers any Six (6) of the following **12**

i	What are semiconductors and name elements and compounds act as semiconductors ?
ii	Give four uses of Boric Acid.
iii	Justify that Boric Acid is monobasic Acid.
iv	What objections were raised on Kekule's structure for benzene molecule ?
v	How phenol is converted into Bakelite ?
vi	How Picric Acid is obtained from phenol ?
vii	What is Silver Mirror Test ?
viii	How would you convert acetic acid into acetic anhydride ?
ix	Discuss strecker synthesis for the preparation of amino acid.

SECTION-II

Note: Attempt any Three questions from this section **8 x 3 = 24**

Q.5.(A)	What are hydrides ? Name their types. Give properties of ionic hydrides .	1+1+2
(B)	What are general trends of oxides and hydroxides of alkali and alkaline earth metals ?	2+2
Q.6.(A)	What happens when bleaching powder reacts with (i) HCl (ii) NH_3 (iii) H_2SO_4 (Excess) (iv) CO_2	1+1+1+1
(B)	Describe screening and bleaching steps in Neutral sulphite semi chemical process.	1+3
Q.7.(A)	Define sp^3 hybridization. Discuss it with a suitable example along with labeled diagram.	1+1+2
(B)	Define nucleophilic substitution reaction. Explain SN_2 mechanism in detail.	1+3
Q.8.(A)	Discuss oxidation reactions of alkynes. (any two)	4
(B)	Describe disproportionation reaction in benzaldehyde , when it is treated with aqueous solution of 50 % NaOH at room temperature.	4
Q.9.(A)	Give preparation of benzene with any four methods.	4
(B)	Give reactions for the preparation of phenyl acetate , benzene cyclohexanol and picric acid from phenol.	4

Roll No. : _____

Objective
Paper Code
8485

Intermediate Part Second

CHEMISTRY (Objective) GROUP - I

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	Which acid can be used as a catalyst in Friedel-Crafts reactions?	HNO_3	$BeC\ell_2$	$A\ell C\ell_3$	H_2SO_4
2	The presence of a double bond in a compound is the sign of:	Saturation	Unsaturation	Substitution	Elimination
3	Which set of hybrid orbitals has planar triangular shape:	sp^2	sp^3	sp	dsp^2
4	The colour of transition metal complexes is due to:	Paramagnetic nature of element	Ionization	Loss of S-electron	d-d transition of electrons
5	Bleaching powder may be produced by passing chlorine over:	Calcium carbonate	Hydrated calcium sulphate	Calcium hydroxide	Magnesium hydroxide
6	Nitric oxide forms a brown coloured addition compound with $FeSO_4$. This test is used to confirm the presence of:	Carbonates	Phosphates	Nitrates	Sulphates
7	Which element forms an ion with charge +3?	Beryllium	Aluminum	Carbon	Silicon
8	Which ion will have the maximum value of heat of hydration?	Na^+	Cs^{+1}	Ba^{+2}	Mg^{+2}
9	Sodium reacts with excess of oxygen and forms:	Sub oxide	Normal oxide	Peroxide	Super oxide
10	The pH range of the acid rain is:	7 – 6.5	6.5 – 6	6 – 5.6	Less than 5
11	In purification of potable water the coagulant used is:	Nickel sulphate	Copper sulphate	Barium sulphate	Alum
12	Phosphorous helps in the growth of:	Root	Leaves	Stem	Seed
13	Which polymer is an addition polymer?	Nylon-6,6	Polystyrene	Terylene	Epoxy resin
14	Which acid is used in the manufacturing of synthetic fiber?	Formic acid	Oxalic acid	Carbonic acid	Acetic acid
15	Which will have the highest boiling point?	Mathanal	Ethanal	Propanal	2-Hexanone
16	Which compound shows hydrogen bonding?	C_2H_5OH	C_2H_4	$C_2H_5C\ell$	CH_3-O-CH_3
17	For which mechanism, the first step involved is the same:	E1 and E2	E2 and S_N2	S_N1 and E2	E1 and S_N1

Intermediate Part Second Roll No. _____

CHEMISTRY (Subjective) GROUP - I

Time: 02:40 Hours Marks: 68

SECTION – I

2. **Write short answers to any EIGHT parts.** 16

(i) Give two chemical reactions of ZnO which prove its amphoteric character.
(ii) Alkali metals give ionic hydrides. Give justification for the statement.
(iii) What happens when gypsum is strongly heated?
(iv) What is lime mortar?
(v) Why do K_2CrO_4 and $K_2Cr_2O_7$ show similar properties in aqueous solution?
(vi) Transition elements show variable oxidation state. Give reason.
(vii) What is β-elimination reaction? Give one example.
(viii) How would you prepare n-butane and ethane from ethyl chloride?
(ix) What is thermoplastic polymer? Give two examples.
(x) What is denaturation of proteins? Give one example.
(xi) Mention two points of difference between DNA and RNA.
(xii) What is requirement for a compound to be used as a fertilizer?

3. **Write short answers to any EIGHT parts.** 16

(i) Define the "Ring Test" for the confirmation of the presence of nitrate ions in the solution.
(ii) Why is SO_3 dissolved in H_2SO_4 and not in water?
(iii) Write four uses of bleaching powder.
(iv) Why HF is weaker acid than $HC\ell$?
(v) Define functional group. Give the functional group of ether and carboxylic acid.
(vi) Define Tauto merism. Give an example.
(vii) How is ethyne prepared on industrial scale?
(viii) How is Raney Nickel prepared? Give its one use.
(ix) Convert ethene into ethyl alcohol.
(x) How is ozone damaged in stratosphere by chlorofluorocarbons (CFCs)?
(xi) Differentiate between primary and secondary pollutants.
(xii) How does acid rain affect environment?

4. **Write short answers to any SIX parts.** 12

(i) What are silicates? How sodium silicate is prepared?
(ii) What is boric acid? How it is prepared in laboratory?
(iii) Why are liquid silicones preferred over ordinary organic lubricants?
(iv) Why nitration of toluene is faster than benzene?
(v) How will you distinguish between methanol and ethanol?
(vi) Describe the term esterification using ethyl alcohol as an example.
(vii) How will you distinguish between acetone and ethyl alcohol?
(viii) How would you convert acetic acid into acetamide?
(ix) What is peptide bond? Write the formula of a dipeptide.

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

5. (a) What are metals? Give their properties with examples. 01,03
(b) What are two major problems in diaphragm cell? How they are solved? 02,02

6. (a) What is disproportionation reaction? Explain reactions of chlorine with cold and hot NaOH. 01,03
(b) Describe digestion and pulp washing in neutral sulphite semi-chemical process. 02,02

7. (a) Explain the reforming of petroleum with suitable example. 04
(b) Differentiate between E_2 and E_1 reactions mechanism. 04

8. (a) How can you prepare the following from ethyne:
(i) Acetaldehyde (ii) Vinyl acetylene (iii) Glyoxal (iv) Acetonitrile 01,01,01,01
(b) How ethanal can react with following:
(i) HCN (ii) $NaHSO_3$ (iii) I_2/NaOH (iv) $NaBH_4$ 01,01,01,01

9. (a) What is resonance and discuss structure of benzene by resonance method? 04
(b) Explain following terms using ethyl alcohol as an example:
(i) Esterification (ii) Ether formation (iii) Oxidation (iv) Dehydration 04

Roll No. : _____

Objective
Paper Code
8488

Intermediate Part Second

CHEMISTRY (Objective) GROUP - II

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	The electrophile in aromatic sulphonation is:	H_2SO_4	HSO_4^-	SO_3 ●	SO_3^+
2	When cyanogen chloride ($C\ell - CN$) is made to react with ethyl magnesium bromide the product formed is:	$CH_3 - CN$	$CH_3 - CH_2 - CN$ ●	$CH_3 - CH_2 - CH_2 - CN$	$CH_2 = CH - CN$
3	Which compound will have the maximum repulsion with water?	C_6H_6 ●	C_2H_5OH	$CH_3CH_2CH_2 - OH$	$CH_3 - O - CH_3$
4	It will have the highest boiling point:	Mathanal	Ethanal	Propanal	2-Hexanone ●
5	Which reagent is used to reduce a carboxylic group to an alcohol?	H_2 / Ni	H_2 / Pt	$NaBH_4$	$LiA\ell H_4$ ●
6	Nitrogeneous bases is not present in RNA:	Cytosine	Adenine	Thiamine ●	Uracil
7	Phosphorus helps the growth of:	Root	Leave	Stem	Seed ●
8	Methane has a mean residence time in atmosphere about:	3 – 7 years ●	4 – 7 years	5 – 7 years	6 – 7 years
9	Newspaper can be recycled again and again by how many times?	2	3	4	5 ●
10	Select the two normal elements are present in seventh period:	Rb , Sr	Cs , Ba	Fr , Ra ●	La , Hf
11	It does not belong to alkaline earth metals:	Be	Ra	Ba	Rn ●
12	The chief ore of aluminum is:	$Na_3A\ell F_6$	$A\ell_2O_3 \cdot 2H_2O$ ●	$A\ell_2O_3$	$A\ell_2O_3 \cdot H_2O$
13	Birkeland-Eyde process used for the preparation of:	HNO_3 ●	H_2SO_4	C_6H_6	HCHO
14	The anhydride of $HC\ell O_4$ is:	$C\ell O_3$	$C\ell O_2$	$C\ell_2O_5$	$C\ell_2O_7$ ●
15	It is a typical transition metal:	Sc	Y	Co ●	Ra
16	Linear shape is associated with which set of hybrid orbitals?	sp ●	sp^2	sp^3	dsp^2
17	Synthetic rubber is made by polymerization of:	Chloroform	Acetylene	Divinyl acetylene	Chloroprene ●

Intermediate Part Second Roll No. _____

CHEMISTRY (Subjective) GROUP - II

Time: 02:40 Hours Marks: 68 Faisalabad Board-2024

SECTION – I

Write short answers to any EIGHT parts. 16

(i) What is the difference between acidic and basic oxides? Give one example of each.
(ii) Carbon and hydrogen possess reducing properties. Show with equations.
(iii) Decomposition of lithium nitrate gives different products than the nitrates of other alkali metals. Why? Give reaction.
(iv) Give brief description of alkali and alkaline earth metal sulphates solubility in water.
(v) How is K_2CrO_4 converted into $K_2Cr_2O_7$? Show with reaction.
(vi) How is chromyl chloride obtained from potassium dichromate? Give reaction.
(vii) How is ethene prepared by E_2 elimination reaction?
(viii) Give reaction for the preparation of 1-Butanol from Grignard reagent.
(ix) What is the difference between isomerases and ligases?
(x) Give reaction for the formation of soap from triglyceride.
(xi) Give brief description of the rancidity of fats.
(xii) Give names of the nitrogeneous fertilizers.

3. **Write short answers to any EIGHT parts.** 16

(i) How does $PC\ell_5$ react with water?
(ii) Write names and formulas of any two sulphide ores of Sulphur.
(iii) Give chemical reactions of H_2SO_4 with $NaC\ell$ and $NaBr$.
(iv) What is available chlorine?
(v) Define isomerism. Write two isomers of butane.
(vi) How was coal formed from wood under the Earth?
(vii) Write common name and structural formula of 1-methyl propene.
(viii) What is incomplete oxidation of CH_4?
(ix) Give structural formulae of the compounds: (i) Potassium maleate (ii) Disodium succinate
(x) How is mustard gas prepared from ethene?
(xi) What are primary pollutants? Give two examples.
(xii) What is leachate?

4. **Write short answers to any SIX parts.** 12

(i) How is H_3BO_3 prepared from (i) Borax (ii) Colemanite
(ii) Write four uses of borax.
(iii) Why are the liquid silicones preferred over the ordinary organic lubricants?
(iv) How is ethyl benzene prepared by Wurtz-Fitting reaction?
(v) How are the phenols prepared by Dow's method?
(vi) Describe the term esterification using ethyl alcohol as an example.
(vii) Define silver mirror test. Give the reaction involved.
(viii) How is acetic acid converted into (i) Methane (ii) Acetic anhydride
(ix) What is Zwitter ion? Give its structural formula.

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

5. (a) Discuss position of hydrogen at the top of IA group. Give similarities and dissimilarities. 04
(b) Describe the manufacture of NaOH by diaphragm cell. 04

6. (a) What are disproportionation reaction? How does NaOH react with $C\ell_2$ in hot and cold state? 01,03
(b) What is meant by setting of cement? Explain the reaction taking place in first 24 hours of setting of cement. 01,03

7. (a) Write notes on: (i) Catalytic cracking (ii) Steam cracking 02,02
(b) What do you understand by the term β-elimination reaction? Explain E-1 mechanism in detail. 01,03

8. (a) How will you synthesize the following compounds starting from ethyne?
(i) Acrylonitrile (ii) Acetaldehyde (iii) Glyoxal (iv) Methyl nitrile 04
(b) What is Cannizzaro's reaction? Describe its mechanism and prepare methanol and formic acid by this reaction. 04

9. (a) Discuss atomic orbital treatment of benzene in detail. 04
(b) Describe two reactions of each in which C-O and O-H bonds of alcohol are broken. 02,02

Roll No. of Candidate : _____

CHEMISTRY **Intermediate Part-II , Class 12th (1stA 424- II)** **Paper: II** **Group – I**

Time: 20 Minutes **OBJECTIVE ..... Code: 8483** **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.

1. The main pollutant of leather tanneries in the waste water is due to salt of

(A) Lead (B) Chromium (VI) ● (C) Copper (D) Chromium (III)

2. One of the following will have the highest boiling point

(A) methanal (B) ethanal (C) propanal (D) 2 – hexanone ●

3. The normal amount of overhead Ozone is about

(A) 150 DU (B) 250 DU (C) 350 DU ● (D) 450 DU

4. Ethanol can be converted into ethanoic acid by

(A) Hydrogenation (B) Hydration (C) Oxidation ● (D) Fermentation

5. Phosphorus helps the growth of

(A) root (B) leaf (C) stem (D) seed ●

6. When ethanal $\left(CH_3 - \overset{\overset{O}{\|}}{C} - H\right)$ is made to react with ethyl Magnesium Bromide followed by acid hydrolysis, the product formed is

(A) 1–propanol (B) 2–propanol (C) 1–butanol (D) 2–butanol ●

7. Which one of the following elements is not present in all proteins?

(A) Sulphur ● (B) Carbon (C) Hydrogen (D) Nitrogen

8. The anhydride of $HClO_4$ is

(A) ClO_3 (B) ClO_2 (C) Cl_2O_5 (D) Cl_2O_7 ●

9. Which reagent is used to reduce a Carboxylic group to an alcohol?

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

10. In ring test, the colour of $FeSO_4 \cdot NO$ is

(A) Brown ● (B) Red (C) Green (D) Black

11. The conversion of n-hexane into benzene by heating in the presence of Pt is called

(A) Isomerization (B) Aromatization ● (C) de-alkylation (D) Re-arrangement

12. The chief ore of aluminium is

(A) Na_3AlF_6 (B) $Al_2O_3 \cdot 2H_2O$ ● (C) Al_2O_3 (D) $Al_2O_3 \cdot H_2O$

13. β–β′-dichloroethyl sulphide is commonly known as

(A) Laughing gas (B) Bio-gas (C) Mustard gas ● (D) Phosgene gas

14. One of the following is not an alkali metal

(A) Francium (B) Caesium (C) Rubidium (D) Radium ●

15. The state of hybridization of Carbon atom in Methane is

(A) sp^3 ● (B) sp^2 (C) sp (D) dsp^2

16. Select the two elements which are present in third period

(A) Li , Be (B) Na , Mg ● (C) K , Ca (D) Rb , Sr

17. One of the following is a typical transition metal

(A) Sc (B) Y (C) Co ● (D) Ra

CHEMISTRY | Intermediate Part-II , Class 12th (1st A 424) | Paper: II | Group – I

Time: 2:40 Hours | SUBJECTIVE | 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. Why the ionic radii of negative ions are larger than the size of their parent atoms? Give example.

ii. Give two defects in Mendeleev's periodic table.

iii. Why transition elements have variable oxidation states?

iv. $KMnO_4$ acts as oxidizing agent? Justify with two examples.

v. Write the chemistry of setting of cement in first twenty four hours.

vi. Alkali metals give ionic hydrides. Give reason.

vii. Write the formula of (a) Asbestos (b) Halite

viii. What is the excellent method to prepare Alkyl Iodide?

ix. What is terpolymer? Give one example.

x. What are the monosaccharides? Give one example.

xi. Compare the compound protein with derived protein.

xii. How Grignard reagent reacts with "HCHO"?

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

i. What is aqua regia? How does it dissolve gold?

ii. NO_2 is oxidizing agent. Prove it with two suitable examples.

iii. Arrange the oxidizing power of following with reason: F_2 , Cl_2 , Br_2 , I_2

iv. Why I_2 is solid while F_2 is gas?

v. Define functional group with any two examples.

vi. Differentiate between metamerism and position isomerism, with suitable examples.

vii. How oxalic acid is prepared from acetylene?

viii. Why ethyne is less reactive than ethene?

ix. Why alkanes are called as paraffins?

x. What are leachate?

xi. Define Biochemical Oxygen demand.

xii. What is lithosphere?

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

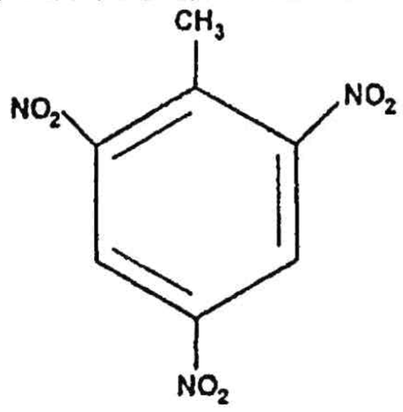
i. How to prepare borax from coleminte?

ii. Give two important uses of silicates.

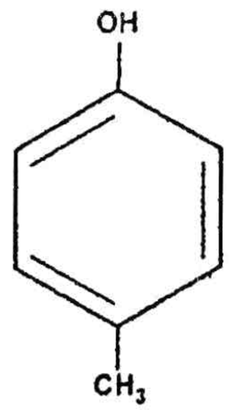
iii. What is white lead? Give its use.

iv. Write IUPAC names of the following molecules

a)



b)



(Turn Over)

v. Ethyl alcohol is a liquid while methyl chloride is a gas, justify it.

vi. Give the reaction of phenol with:
(a) Zn (b) HNO_3

vii. How acetaldehyde reacts with the following reagents?
(a) HCN (b) I_2/NaOH

viii. What is vinegar and give its use?

ix. Write down the mechanism of reaction between acetic acid and methanol.

SECTION – II

5. **(a)** What is hydration energy? Give one example. Discuss its variation in groups and periods of periodic table. **(1+1+2=4)**

(b) Write down any eight uses of lime in industry. **(4)**

6. **(a)** Give the reactions of Bleaching powder with **(4)**
i. dil H_2SO_4 ii. $HC\ell$
iii. NH_3 iv. CO_2

(b) Describe the process of digestion of paper pulp in Neutral Sulphite chemical process. **(4)**

7. **(a)** What are organic compounds? Describe the following terms (give one example for each). **(4)**
i. Alicyclic Compounds
ii. Aromatic Compounds
iii. Heterocyclic Compounds

(b) Write down the chemical reaction of Ethyl Magnesium Bromide with CO_2 , HCHO , Acetone and Epoxide. **(4)**

8. **(a)** Explain acidic nature of alkyne in detail by giving two examples. **(4)**

(b) What is aldol condensation? Give its mechanism. **(4)**

9. **(a)** Discuss catalytic oxidation of Benzene. **(4)**

(b) How ethers are prepared from following? **(4)**
i. Williamsons Synthesis ii. Ag_2O

Roll No. of Candidate : _____

CHEMISTRY **Intermediate Part-II , Class 12th (1stA 424- 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. 1. Which one of the following compounds is most reactive?
(A) Benzene (B) Ethene ● (C) Ethane (D) Ethyne

2. Which one of the following is a non-typical transition element?
(A) Cr (B) Mn (C) Zn ● (D) Fe

3. β–β′-dichloroethyl sulphide is commonly known as
(A) Laughing gas (B) Bio-gas (C) Phosgene gas (D) Mustard gas ●

4. Which three elements are needed for the healthy growth of plants?
(A) N , S , P (B) N , Ca , P (C) N , P , K ● (D) N , K , C

5. The reaction between fat and NaOH is called
(A) Esterification (B) Hydrogenolysis (C) Fermentation (D) Saponification ●

6. Which compound is more soluble in water?
(A) C_2H_5OH ● (B) C_6H_5OH (C) CH_3COCH_3 (D) n–hexanol

7. Which one of the following ions has maximum value of heat of hydration?
(A) Na^+ (B) Cs^{2+} (C) Ba^{2+} (D) Mg^{2+} ●

8. Hydrogen bond is the strongest between the molecules of
(A) HF ● (B) HCl (C) HBr (D) HI

9. Tincal is a mineral of
(A) Al (B) B ● (C) Si (D) C

10. The amount of Ozone in the atmosphere is expressed in units
(A) KJ (B) KJ/mole (C) DU ● (D) N

11. The solution of which acid is used for seasoning of food?
(A) Formic acid (B) Acetic acid ● (C) Benzoic acid (D) Butanoic acid

12. The state of hybridization of Carbon atom in Methane is
(A) sp^3 ● (B) sp^2 (C) sp (D) dsp^2

13. Peroxyacetyl nitrate (PAN) is an irritant to human beings and it affects
(A) Eyes ● (B) Ears (C) Stomach (D) Nose

14. Choose the gas which is obtained by the reaction of Ethyl alcohol with conc. H_2SO_4
(A) CO (B) CO_2 (C) C_2H_2 (D) C_2H_4 ●

15. Select the two normal elements present in sixth period
(A) K , Ca (B) Rb , Sr (C) Cs , Ba ● (D) La , Hf

16. Cannizzaro's reaction is not given by
(A) Formaldehyde (B) Acetaldehyde ●
(C) Benzaldehyde (D) Trimethylacetaldehyde

17. When water (H – OH) is made to react with Ethyl Magnesium Bromide, the product formed is
(A) $CH_2 = CH_2$ (B) $HC \equiv CH$ (C) $CH_3 - CH_3$ ● (D) CH_4

318-(IV)- 1stA 424-30000

CHEMISTRY **Intermediate Part-II , Class 12th (1stA 424)** **Paper: II** **Group – II**

Time: 2:40 Hours **SUBJECTIVE** **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. Why diamond is non-conductor and graphite is fairly a good conductor?

ii. Write the names of families in periodic table.

iii. Why 'd' and 'f' block elements are called transition elements?

iv. How $KMnO_4$ and $K_2Cr_2O_7$ react with H_2S?

v. Write the chemistry of setting of cement in between 1 – 7 days.

vi. Justify that BeO is amphoteric in nature.

vii. What will happen when Magnesium reacts with (i) H_2 (ii) N_2

viii. Starting from primary alkyl halide, prepare ethyl alcohol.

ix. What is degree of polymerization?

x. What are the oligosaccharides? Give one example.

xi. What do you mean by denaturation of protein?

xii. How does Grignard reagent react with CO_2?

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

i. Write down the structures of N_2O_3 and NO_2.

ii. Why the elements of group VI A other than Oxygen show more than two oxidation states?

iii. Write down any four uses of bleaching powder.

iv. Define disproportionation reaction with an example.

v. Define sp hybridization with an example.

vi. How wood is converted into coal? Give its equation too.

vii. What is Wolf–Kishner's reduction? Give reaction.

viii. How is $PC\ell_3$ produced from $SOC\ell_2$?

ix. How chloroprene is prepared from acetylene? Give reaction, also.

x. How aeration is used for purification of H_2O?

xi. What is acid rain? How does it affect on aquatic life?

xii. How smog is produced? Write down its conditions of formation.

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

i. What is the action of an aqueous solution of borax on litmus?

ii. Give any two uses of boric acid.

iii. How and under what conditions does Aluminium react with the following :
(a) Halogens (b) Alkalies

iv. What is meant by the terms : (a) Nitration (b) Halogenation

v. Why Ethanol has higher boiling point than diethyl ether?

(Turn Over)

vi. How will you distinguish between methanol and ethanol?

vii. Give the mechanism of addition of HCN to acetone.

viii. How to prepare acetic acid from ethyne?

ix. What are zwitter ions?

SECTION – II

5. **(a)** What are hydrides? Explain types of hydrides with their properties. **(4)**

(b) What is the role of lime in agriculture and ceramic industries? **(4)**

6. **(a)** Write down any eight applications of noble gases in daily life. **(4)**

(b) What is significance of potassium fertilizers in plant growth? Explain the manufacturing of KNO_3 on industrial scale. **(4)**

7. **(a)** Explain any four types of structural isomerism by giving one example of each. **(4)**

(b) What are alkyl halides? How are the alkyl halides prepared from alcohol by three different reactions? **(4)**

8. **(a)** Write a note on photochemical halogenation of methane. **(4)**

(b) Describe the Reduction reactions of Carbonyl Compounds with following reagents: **(4)**

i. $NaBH_4/H_3O^+$ ii. Ni/H_2

(Give two reactions for each)

9. **(a)** What is Kekule's Structure of Benzene? How did he support his theory? **(1+3=4)**

(b) How will you prepare phenol from the following? **(4)**

i. Chlorobenzene
ii. Sodium salt of Benzene Sulphonic Acid

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

(Academic Sessions 2020 – 2022 to 2022 – 2024)

CHEMISTRY 224-1st Annual-(INTER PART – II) Time Allowed : 20 Minutes

Q.PAPER – II (Objective Type) GROUP – I Maximum Marks : 17

PAPER CODE = 8487

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	Preparation of vegetable ghee involves : (A) Halogenation (B) Dehydrogenation (C) Hydroxylation (D) Hydrogenation ●
3	One of the following hydrogen halide is the weakest acid in solution : (A) HI (B) HBr (C) $HC\ell$ (D) HF ●
4	Which compound shows hydrogen bonding : (A) C_2H_6 (B) $C_2H_5C\ell$ (C) $CH_3-CH_2-CH_3$ (D) ● C_2H_5OH
5	One of the following acid can be used as a catalyst in Friedel-Crafts reactions : (A) $A\ell C\ell_3$ ● (B) HNO_3 (C) $BeC\ell_2$ (D) H_2SO_4
6	Down's cell is used to prepare : (A) Sodium carbonate (B) Sodium bicarbonate (C) Sodium metal ● (D) Sodium hydroxide
7	Newspaper can be recycled again and again by how many times : (A) 2 (B) 3 (C) 4 (D) 5 ●
8	Co-ordination number of Pt in $[PtC\ell(NO_2)(NH_3)_4]$ is : (A) 6 ● (B) 4 (C) 1 (D) 2-
9	Acetic acid is manufactured by : (A) Distillation (B) Ozonolysis (C) Fermentation ● (D) Esterification
10	Select the two normal elements which are present in fourth period : (A) K, Ca ● (B) Rb, Sr (C) Cs, Ba (D) Fr, Ra
11	 When ethylene epoxide (CH_2-CH_2) is made to react with ethyl magnesium bromide followed by acid hydrolysis the product formed is : (A) 1-propanol (B) 2-propanol (C) 1-butanol ● (D) 2-butanol
12	One of the following metal used in the thermite process because of its reactivity : (A) Iron (B) Copper (C) Aluminium ● (D) Zinc
13	Which woody raw material is used for the manufacture of paper pulp : (A) Cotton (B) Bagasse (C) Poplar ● (D) Rice straw
14	Cannizzaro's reaction is not given by : (A) Formaldehyde (B) Acetaldehyde ● (C) Benzaldehyde (D) Trimethylacetaldehyde
15	The formation of chloramines prevented in ---- pH : (A) Acidic (B) Alkaline ● (C) Neutral (D) Low
16	Select from the following one which is alcohol : (A) CH_3-O-CH_3 (B) CH_3-CH_2-OH ● (C) CH_3COOH (D) CH_3-CH_2-Br
17	Choose the gas which is obtained by the reaction of phosphorus with thionyl chloride : (A) SO_2 ● (B) PH_3 (C) CO_2 (D) C_2H_2

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

(Academic Sessions 2020 – 2022 to 2022 – 2024)

CHEMISTRY 224-1st Annual-(INTER PART – II) Time Allowed : 2.40 hours

PAPER – II (Essay Type) GROUP – I Maximum Marks : 68

SECTION – I

2. Write short answers to any EIGHT (8) questions : **16**

(i) Why the second value of electron affinity of an element is usually shown with a positive sign? Give example.

(ii) Prove that ZnO is an amphoteric oxide.

(iii) Write down the chemical formula of dolomite and asbestos.

(iv) What is milk of magnesia and where it is used?

(v) What is anode coating?

(vi) Why does the compounds of transition elements are coloured?

(vii) Define nucleophile with two examples.

(viii) Which is the best method for the preparation of alkyl halide? Give reaction.

(ix) Define saponification number with an example.

(x) Write down the structures of acrylic acid and acrylonitrile.

(xi) Differentiate between copolymer and terpolymer. Give examples.

(xii) Why nitrogenous fertilizers are supplied to plants?

3. Write short answers to any EIGHT (8) questions : **16**

(i) What is the effect of temperature on N_2O_4?

(ii) How does HNO_3 react with Cu metal?

(iii) Why iodine has metallic luster?

(iv) Which halogen is used as an antiseptic?

(v) Explain the type of bonds and shape of HCHO molecule using hybridization approach.

(vi) Write the structural formulas of the possible isomers of C_4H_{10}.

(vii) How 2-Butene will react with following reagents :
(a) O_2 in the presence of Ag (b) Br_2 in $CC\ell_4$

(viii) What is Raney Nickel and give its use?

(ix) How to test the unsaturation of alkenes? Give reaction.

(x) What are secondary pollutants?

(xi) What is meant by term BOD and COD?

(xii) How does ozone help to protect us?

4. Write short answers to any SIX (6) questions : **12**

(i) What are different types of boric acid? Give their names.

(ii) What are products formed when aluminium reacts with $HC\ell$ and H_2SO_4?

(iii) Give four common properties of group IVA elements.

(iv) How is ethyl benzene prepared through Wurtz fitting reaction?

(v) How are ethyl chloride and ethyl amine prepared from ethanol?

(Turn Over)

4. (vi) How will you convert ethanol into ethanal?

(vii) Give four uses of acetaldehyde.

(viii) What is Ninhydrin test? Which compounds are detected through this test?

(ix) How would you carry out the following conversions :
(a) Acetic acid into acetamide. (b) Acetic acid into acetone.

SECTION – II

Note : Attempt any THREE questions.

5. (a) Discuss variation of melting and boiling points of elements across the short periods of periodic table. 4

(b) Give any four points to elaborate the peculiar behaviour of beryllium. 4

6. (a) How does fluorine differ from its own family members? 4

(b) What is setting of cement? Discuss the reactions taking place in first 24 hours in setting of cement. 4

7. (a) Define hybridization and describe sp-hybridization of ethyne. 4

(b) Write a note on Beta-Elimination Reactions of alkyl halides. 4

8. (a) How does ethyne reacts with : 4
(i) Halogen acid
(ii) Strong alkaline $KMnO_4$ solution
(iii) Water in the presence of $HgSO_4$ / H_2SO_4
(iv) Ammonia in the presence of Al_2O_3.

(b) Explain haloform reaction by giving four reaction of halogen with : 4

(i) CH_3CHO (ii) CH_3COCH_3 (iii) $CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$ (iv) CH_3CH_2OH

9. (a) Give two reactions in which benzene behave as saturated compounds and two in which benzene behave as unsaturated compound. 2,2

(b) How will you prepare bakelite and picric acid from phenols. 3,1

(To be filled in by the candidate)

(Academic Sessions 2020 – 2022 to 2022 – 2024)

CHEMISTRY 224-1st Annual-(INTER PART – II) Time Allowed : 20 Minutes

Q.PAPER – II (Objective Type) GROUP – II Maximum Marks : 17

PAPER CODE = 8484

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	Ethers show the phenomenon of : (A) Position isomerism (B) Functional group isomerism (C) Meta merism ● (D) Cis trans isomerism
2	Molecular formula of white phosphorus is : (A) P_4 ● (B) P_8 (C) P_3 (D) P_2
3	Which of the following reagents will react with both aldehydes and ketones : (A) Grignard reagent ● (B) Tollen's reagent (C) Fehling reagent (D) Benedicts reagent
4	Which three elements are needed for the healthy growth of plants : (A) N, S, P (B) N, Ca, P (C) N, P, K ● (D) N, K, C
5	The mineral ($CaSO_4.2H_2O$) has a general name : (A) Gypsum ● (B) Dolomite (C) Calcite (D) Epsom salt
6	A single chloride free radical can destroy how many ozone molecules : (A) 100 (B) 100000 ● (C) 10000 (D) 10
7	Hydrogen bond is strongest between the molecules of : (A) HF ● (B) $HC\ell$ (C) HBr (D) HI
8	Which compound is responsible for ozone depletion : (A) $CHC\ell_3$ (B) $CH_2C\ell_2$ (C) CFC ● (D) $CC\ell_4$
9	Which one of the nitrogen base is not present in RNA : (A) Cytocine (B) Adenine (C) Thiamine ● (D) Uracil
10	Benzene cannot undergo : (A) Substitution reaction (B) Addition reaction (C) Oxidation reaction (D) Elimination reaction ●
11	The chief ore of aluminum is : (A) $Na_2A\ell F_6$ (B) $A\ell_2O_3.2H_2O$ ● (C) $A\ell_2O_3$ (D) $A\ell_2O_3.H_2O$
12	Which of the following has maximum hydration energy : (A) Li^+ (B) Na^+ (C) K^+ (D) Mg^{+2} ●
13	Ether linkage is : (A) $-\overset{|}{\underset{|}{C}}-N-\overset{|}{\underset{|}{C}}-$ (B) $-\overset{|}{\underset{|}{C}}-O-\overset{|}{\underset{|}{C}}-$ ● (C) $-\overset{|}{\underset{|}{C}}-S-\overset{|}{\underset{|}{C}}-$ (D) $-\overset{|}{C}=N-\overset{|}{\underset{|}{C}}-$
14	The order of a typical S_N2 reaction is : (A) Zero (B) First (C) Second ● (D) Third
15	Coordination number of Pt in $[PtC\ell(NO_2)(NH_3)_4]$ is : (A) 2- (B) 4 (C) 1 (D) 6 ●
16	Which compound is called a universal solvent : (A) H_2O ● (B) CH_3OH (C) C_2H_5OH (D) CH_3-O-CH_3
17	The solution of which acid is used for seasoning of food : (A) Formic acid (B) Acetic acid ● (C) Benzoic acid (D) Butanoic acid

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

(Academic Sessions 2020 – 2022 to 2022 – 2024)

CHEMISTRY 224-1st Annual-(INTER PART – II) Time Allowed : 2.40 hours

PAPER – II (Essay Type) GROUP – II Maximum Marks : 68

SECTION – I

2. Write short answers to any EIGHT (8) questions : **16**

(i) Why size of cation is smaller than its parent atom? Give example also.

(ii) Why diamond is a non-conductor while graphite is conductor?

(iii) What is lime mortar?

(iv) Write down the chemical formula of Sylvite and Natron.

(v) Find the value of 'x' in the complex of Fe (II), $[Fe(CN)_6]^x$.

(vi) Under what conditions does Aℓ corrode?

(vii) Why R-I is more reactive than R-F?

(viii) Define leaving group with two examples.

(ix) Differentiate between homopolymer and terpolymer. Give examples.

(x) Write down the structures of epichlorohydrin and diphenylol propane.

(xi) Write down any two characteristics of lipids.

(xii) Write any four essential qualities of a good fertilizer.

3. Write short answers to any EIGHT (8) questions : **16**

(i) Why does aqua regia dissolve platinum?

(ii) How does NO_2 act as an oxidizing agent?

(iii) Why HF is weaker acid than HBr?

(iv) Which halogen is used as an antiseptic?

(v) What is antiknocking agent and give its disadvantage?

(vi) What is tautomerism? Give example.

(vii) How to prepare formaldehyde from ethene?

(viii) How does propyne react with : (a) 10% H_2SO_4 in the presence of $HgSO_4$
(b) Alkaline $KMnO_4$

(ix) How to prepared alkane from carbonyl compounds?

(x) How does acid rain affect our environment?

(xi) How is ozone layer depleted by $CFC\ell_3$?

(xii) What are the harmful effects of chlorination of H_2O?

4. Write short answers to any SIX (6) questions : **12**

(i) Give four uses of aluminium.

(ii) What is meant by the term " inert pair"? Give brief description.

(iii) What is water glass? How is it prepared from sodium carbonate?

(iv) What happens when benzene is heated with conc. H_2SO_4 at 250 °C ?

(v) Why is the boiling point of ethanol higher than that of diethyl ether?

(Turn Over)

4. (vi) Write structural formulas of acetophenone and picric acid.

(vii) How is acetaldehyde prepared from ethylene and acetone from calcium acetate?

(viii) How is acetic acid prepared from ethanol?

(ix) What is the difference between acidic and basic amino acids? Give examples.

SECTION – II

Note : Attempt any THREE questions.

5. (a) Mention four improvements made in Mendeleev's periodic table by Moseley. 4

(b) Describe the commercial preparation of sodium by Down's cell. 4

6. (a) Describe relative reactivities of the halogens as oxidizing agents. 4

(b) Describe phosphatic fertilizers and potassium fertilizers. 4

7. (a) Explain geometric isomerism with suitable examples and also give necessary condition for compound to show geometric isomerism. 4

(b) Give four equations with condition for the preparation of alkyl halides from alcohols. 4

8. (a) Discuss catalytic oxidation of methane. 4

(b) Describe the reaction of ethanal and acetone with following : 2,2
(i) Hydroxyl amine. (ii) Phenyl hydrazine

9. (a) Write down any two reactions in which benzene behaves as if it is a saturated hydrocarbon and two reactions in which it behaves as if it is unsaturated. 2,2

(b) How will you prepare (i) Bakelite (ii) Phenyl acetate from phenol. 2,2

Paper Code Number: 4483	2024 (1st-A) INTERMEDIATE PART-II (12th Class)	Roll No: _____
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	Formula of chloroform is:	CH_3Cl	CCl_4	CH_2Cl_2	$CHCl_3$ ●
2	Benzene cannot undergo reaction like:	Elimination ●	Addition	Oxidation	Substitution
3	Which of given is electrophile?	NH_3	H_2O	BF_3 ●	Cl_2
4	Which compound shows strong hydrogen bonding?	C_2H_6	C_2H_4	$C_2H_5-O-C_2H_5$	C_2H_5OH ●
5	Which of the given compound will react with Tollen's reagent?	$CH_3-\overset{\overset{O}{\|}}{C}-OH$	$CH_3-\overset{\overset{O}{\|}}{C}-H$ ●	$CH_3-\overset{\overset{O}{\|}}{C}-CH_3$	CH_3-O-CH_3
6	Which of given is not fatty acid?	Propanoic acid	Acetic acid	Phthalic acid ●	Butanoic acid
7	Which of these polymers is synthetic polymer?	Polyester ●	Starch	Animal fat	Cellulose
8	Temperature of decomposition zone during manufacturing of cement goes upto:	600^oC	800^oC ●	1000^oC	1200^oC
9	To avoid the formation of toxic compounds with chlorine which substance is used for disinfecting water?	$KMnO_4$	Chloramines	Alums	O_3 ●
10	In water the concentration of dissolved O_2 should be:	1 – 3 ppm	2 – 4 ppm	4 – 8 ppm ●	8 – 12 ppm
11	Which statement is correct?	Na atom is smaller than Na^+	Na atom is larger than K atom	F atom is smaller than F^- ●	F atom is larger than F^-
12	Chile saltpetre has the chemical formula:	$NaNO_3$ ●	KNO_2	$Na_2B_4O_7$	$Na_2CO_3.H_2O$
13	Which element belongs to group IV-A of the Periodic table?	Barium	Sodium	Lead ●	Oxygen
14	Elements of group VI-A also called:	Halogens	Chalogens ●	Chalite	Halite
15	An element having high ionization energy and tends to be chemically inactive is:	An alkali metal	Halogen	Noble gas ●	Transition element
16	Which is the correct formula of Tetraammine Chloro-nitro-Platinum(IV) sulphate?	$[PtCl(NO_2)(NH_3)_4]SO_4$ ●	$[Pt(NO_2)Cl(NH_3)_4]SO_4$	$[Pt(NH_3)_4Cl(NO_2)]SO_4$	$[Pt(NH_3)_4(NO_2)Cl]SO_4$
17	A double bond consists of:	Two sigma bonds	Two Pi bonds	One sigma and one Pi bond ●	One sigma and two Pi bonds

INTERMEDIATE PART-II (12th Class)	**2024 (1st-A)**	**Roll No: _____**
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)	Define ionization energy with an example.
(ii)	Write down any two dissimilarities of Hydrogen with group 1-A elements.
(iii)	How is gypsum converted into Plaster of Paris?
(iv)	Write down the formulas of (i) Dolomite (ii) Halite
(v)	How chromate ions are converted into dichromate ions?
(vi)	Why does damaged tin plated iron get rusted quickly?
(vii)	Elaborate the mechanism of S_N2 reactions.
(viii)	Define nucleophile with an example
(ix)	Draw the structure of cholesterol.
(x)	How vinyl acetate converted into polyvinyl acetate.
(xi)	Write down the name of any four classes of enzymes.
(xii)	Mention the role of Phosphorus in early growth of plant.

3. Attempt any eight parts. **8 × 2 = 16**

(i)	How alkene is converted into epoxide? What is its application?
(ii)	Prepare the cyclic polymer of ethyne.
(iii)	How good quality polythene is obtained from ethene?
(iv)	How does H_3PO_3 act as a reducing agents?
(v)	Give four uses of H_2SO_4
(vi)	Write the names and examples of two compounds containing carbonyl functional group.
(vii)	Name two types of the isomerism shown by alkene with example.
(viii)	Justify that bleaching powder is oxidizing agent.
(ix)	What are Freon and Teflon?
(x)	What chemical reaction takes place in stratosphere with ozone?
(xi)	What is Smog? Give its types?
(xii)	What are leachates?

4. Attempt any six parts. **6 × 2 = 12**

(i)	Why CO_2 is gas while SiO_2 is solid?	2
(ii)	Write down any two uses of Al.	1+1=2
(iii)	What is the chemistry of borax bead test?	2
(iv)	Define resonance. Write down Kekule's structures of benzene.	1+0.5+0.5=2
(v)	What is denaturing of alcohol?	2
(vi)	Why is Phenol acidic in nature?	2
(vii)	What is formalin? Give its two uses.	1+0.5+0.5=2
(viii)	Write down the structures of: (a) Malonic acid (b) Phthalic acid	1+1=2
(ix)	What is strecker synthesis?	2

SECTION-II

NOTE: Attempt any three questions. **3 × 8 = 24**

5.(a)	Write down the point of similarities and difference of hydrogen with IA and IVA groups. (any two of each)	4
(b)	Describe with diagram the manufacture of sodium by Down's Cell.	4
6.(a)	Give any eight applications of Noble gases.	4
(b)	How do Diammonium phosphate and Potassium nitrate prepared? Give their properties and uses.	4
7.(a)	What is Cracking of petroleum? Discuss its three types.	1+3=4
(b)	Explain two main factors which govern the reactivity of alkyl halides.	4
8.(a)	Describe both Linear Polymerization and Cyclic polymerization of Acetylene by means of chemical reaction.	4
(b)	Write a note on Aldol condensation reaction of carbonyl compounds with mechanism.	4
9.(a)	Describe structure of benzene on the basis of atomic orbital treatment.	4
(b)	How ethyl alcohol is prepared by the fermentation of: (i) Molasses (ii) Starch	4

23-204(1st-A)-19000 (MULTAN)

Multan Board-2024

Paper Code Number: 4484	**2024 (1st-A) INTERMEDIATE PART-II (12th Class)**	**Roll No:** _____
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	The fibre which is made from acrylonitrile as monomer:	PVC	Rayon fibre	Acrylic fibre ●	Polyester fibre
2	For which crop, ammonium nitrate fertilizer is not used?	Cotton	Wheat	Sugar cane	Paddy rice ●
3	Which of following is better to disinfect water?	$C\ell_2$	O_2	O_3 ●	$KMnO_4$
4	The main pollutant of leather tanneries in the waste water is due to the salt of:	Lead	Chromium(VI) ●	Copper	Chromium(III)
5	Zn, Cd, Hg in Mendeleev's periodic table, were placed with:	Noble metals	Alkaline earth metals ●	Inner transition metals	Coinage metals
6	Down's cell is used to prepare:	Sodium carbonate	Sodium hydroxide	Sodium bicarbonate	Sodium metal ●
7	Boric acid cannot be used:	As antiseptic in medicine	For washing eyes	In soda bottles ●	For enamels and glazes
8	An element that has a high ionization energy and tends to be chemically inactive would most likely to be:	A noble gas ●	A transition element	An alkali metal	A halogen
9	Formic acid on reaction with dehydrating agent give:	CO_2, CO, H_2O	CO, OH^-	CO, H_2O ●	CO and CO_2
10	The strength of binding energy of transition elements depends upon:	Number of electron pairs	Number of unpaired electrons ●	Number of neutrons	Number of protons
11	The state of hybridization of carbon atom in alkane is:	sp^3 ●	sp^2	sp	dsp^2
12	$H_2C = CH - C \equiv CH$ and conc $HC\ell$ on reaction give:	Polyacetylene	Benzene	Chloroprene ●	Divinyl acetylene
13	Amongst the following, the compound that can be most readily sulphonated is:	Toluene ●	Benzene	Nitrobenzene	Chlorobenzene
14	Which one is more reactive alkyl halide?	$R - F$	$R - C\ell$	$R - Br$	$R - I$ ●
15	Methyl alcohol is not used:	As a solvent	As a substitute for petrol ●	As an anti-freezing agent	For denaturing of ethyl alcohol
16	Acetone reacts with HCN to form a cyanohydrin, it is an example of:	Electrophilic addition	Electrophilic substitution	Nucleophilic addition ●	Nucleophilic substitution
17	Which acid is used in the manufacturing of synthetic fibre?	Formic acid	Oxalic acid	Carbonic acid	Acetic acid ●

INTERMEDIATE PART-II (12th Class)	2024 (1st-A)	Roll No: _____
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)	Why are the ionic radii of negative ions larger than the size of their parent atoms? Give example.
(ii)	Why does the oxidation state of noble gases usually zero?
(iii)	Give reactions of lithium with oxygen and carbon dioxide.
(iv)	What are the products formed when magnesium reacts with nitrogen and sulphur?
(v)	Why does damaged tin plated iron get rusted quickly?
(vi)	How does the process of galvanizing protect from rusting
(vii)	Give reaction of ethyl magnesium bromide with formaldehyde followed by acid hydrolysis.
(viii)	Give reaction for the preparation of ethyl alcohol from ethyl bromide. Also mention reaction conditions.
(ix)	Define lipids. Give difference between fats and oils.
(x)	Briefly describe the term "Specificity" of enzyme.
(xi)	What is the difference between simple lipids and compound lipids?
(xii)	Why are nitrogeneous fertilizers supplied to the plants or soil?

3. Attempt any eight parts. **8 × 2 = 16**

(i)	NO_2 is strong oxidizing agent. Prove the truth of this statement giving two examples.
(ii)	Complete and balance the given equations: (i) $P + NO \rightarrow ?$ (ii) $HNO_2 + CO(NH_3)_2 \rightarrow ?$
(iii)	Why HF is weaker acid than $HC\ell$?
(iv)	How does iodine pentoxide (I_2O_5) react with H_2O and CO?
(v)	What is Catenation?
(vi)	What is Catalytic cracking?
(vii)	Write down structural formulas of 1, 3 – Butadiene and 2 – methyl – 2 – butene.
(viii)	Differentiate between clemmensen and wolf-Kishner reduction giving chemical reactions.
(ix)	How would you prepare trans alkene from alkyne?
(x)	What is ecosystem?
(xi)	How do oxides of sulphur adversely affect the environment?
(xii)	How is value of COD determined?

4. Attempt any six parts. **6 × 2 = 12**

(i)	What are Silicones? How are they prepared?
(ii)	What is Borax? Give its commercial preparation.
(iii)	What is importance of oxides of Lead in Paints?
(iv)	What were objections to Kekule's formula for Benzene?
(v)	Ethyl alcohol is a liquid while methyl chloride is a gas. Why?
(vi)	Water has higher boiling point than Ethanol. Justify.
(vii)	How will you distinguish between Methanal and Ethanal?
(viii)	What happens when Sodium formate is heated with Soda lime?
(ix)	What are Essential and Non-essential Amino-Acids?

SECTION-II

NOTE: Attempt any three questions. **3 × 8 = 24**

5.(a)	Discuss the improvements made in the Mendeleev's Periodic Table and also discuss defects in the Mendeleev's Periodic Table.	4
(b)	Explain commercial preparation of Sodium metal by Down's cell and also give advantages of Down's cell.	4
6.(a)	How bleaching powder is prepared by Hasenclever's method?	4
(b)	What is paper? Describe the process of digestion in paper industry.	1+3=4
7.(a)	Define with example: (i) Tautomerism (ii) Metamerism (iii) Position isomerism (iv) Functional group isomerism	1+1+1+1=4
(b)	What do you understand by the term Nucleophilic substitution? Explain S_N2 mechanism in detail.	1+3=4
8.(a)	Define Markownikov's rule. Predict the structures of the alcohol obtained by the addition of the acid to the given compounds: (i) Propene (ii) 1–Butene (iii) 2–Butene	4
(b)	How does acetaldehyde react with (i) $NaHSO_3$ (ii) Conc. $NaOH$ (iii) HCN (iv) NH_2OH	4
9.(a)	Define aromatic nitration along with example and its mechanism.	1+1+2=4
(b)	How ethanol is prepared from molasses and starch?	2+2=4

☆☆☆ Roll No_____

HSSC(Part-II)-A-2024
(For All Sessions)

Subject Code	8	4	8	5

Chemistry(Objective)

(GROUP-I)

Time:20 Minutes 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. The geometry of carbonium ion formed in SN^1 mechanism is:

(A) Tetrahedral (B) Square planar (C) Triangular planar ● (D) Hexagonal

2. Ethanol can be converted into enthanoic acid by:

(A) Hydrogenation (B) Hydration (C) Oxidation ● (D) Fermentation

3. Ketones are prepared by the oxidation of:

(A) Primary alcohol (B) Secondary alcohol ● (C) Tertiary alcohol (D) Long chain primary alcohol

4. Which of the following derivatives cannot be prepared directly from acetic acid?

(A) Acetamide ● (B) Acetyl Chloride (C) Acetic Anhydride (D) Ethyl Acetate

5. Which one of the following elements is **NOT** present in all proteins?

(A) Carbon (B) Hydrogen (C) Nitrogen (D) Sulphur ●

6. Which is **NOT** a calcareous material?

(A) Lime (B) Clay ● (C) Marble (D) Marine shell

7. Peroxyacetyl nitrate (PAN) is an irritant to human beings and it affects:

(A) Eyes ● (B) Ears (C) Stomach (D) Nose

8. The main cause of reducing smog is combustion of:

(A) Oils (B) Coal ● (C) Natural gas (D) Gasoline

9. Ionization energy of an atom does not depend on:

(A) Magnitude of nuclear charge (B) Size of atom (C) Physical state ● (D) Shielding effect

10. The oxide of Beryllium is:

(A) Acidic (B) Basic (C) Amphoteric ● (D) Strongly acidic

11. The chief ore of Aluminium is:

(A) Na_3AlF_6 (B) $Al_2O_3.2H_2O$ ● (C) Al_2O_3 (D) $Al_2O_3.H_2O$

12. The oxidation of "NO" in air produces:

(A) N_2O (B) NO_2 ● (C) N_2O_3 (D) N_2O_5

13. Hydrogen bond is the strongest between the molecules of:

(A) HF ● (B) HCl (C) HBr (D) HI

14. Coordination number of $[Pt(OH)_2(NH_3)_4]SO_4$ is:

(A) II (B) III (C) IV (D) VI ●

15. The state of hybridization of carbon atom in ethane is:

(A) SP^3 ● (B) sp^2 (C) SP (D) dsp^2

16. Preparation of vegetable ghee involves:

(A) Halogenation (B) Hydrogenation ● (C) Hydroxylation (D) Dehydrogenation

17. Aromatic hydrocarbons are the derivatives of:

(A) Normal series of paraffins (B) Alkenes (C) Benzene ● (D) Cyclohyxane

Roll No _____

HSSC(Part-II)-A-2024
(For All Sessions)

(Group-I)

Marks : 68

Time: 2:40 hours

Chemistry (Subjective)

SECTION-I

2. Write short answers of any eight parts from the following: (8x2=16)

i. Define hydration energy. How does it vary from top to bottom in $I-A$ and $II-A$ groups?
ii. Why do the fluorides show the highest melting and boiling points as compared to other halides?
iii. What are the products formed when lithium and sodium nitrates are decomposed?
iv. Why is $Mg(OH)_2$ sparingly soluble in water while $Ba(OH)_2$ most soluble?
v. What is the difference between paramagnetic and diamagnetic substances? Give brief description.
vi. What is meant by co-ordination number and co-ordination sphere?
vii. How is ethane prepared from ethyl bromide?
viii. How CH_3-CHO react with ethyl magnesium bromide followed by acid hydrolysis?
ix. What is difference between Hydrolases and Lysases?
x. Why are lipids important?
xi. How temperature and radiation affect the enzymes?
xii. What is an acid rain? Give brief description about its impact on our environment.

3. Write short answers of any eight parts from the following: (8x2=16)

i. Write down any four similarities between oxygen and sulphur.
ii. Give two methods of preparation of NO_2.
iii. What are Freons and Teflons?
iv. Give chemical reaction of $NaOH$ and Cl_2 in hot state (70°C).
v. What is modern definition of organic chemistry?
vi. Define functional group isomerism with one example.
vii. Differentiate between saturated and unsaturated hydrocarbons.
viii. What is catalytic oxidation of CH_4 upto the formation of $HCHO$?
ix. The reaction of propene with HBr follow Markownikov's rule. Justify the statement by giving reaction.
x. Define environmental pollutant.
xi. Write down any two harmful effects of acid rain.
xii. How are leather tanneries responsible for pollution of water?

4. Write short answers of any six parts from the following: (6x2=12)

i. What chemical garden?
ii. Write down four uses of Sodium Silicate.
iii. Why is the aqueous solution of Borax alkaline in nature?
iv. Prepare Glyoxal from benzene.
v. How are ethers prepared by Williamson's synthesis?
vi. Why is phenol acidic in nature?
vii. Give the reactions of Formaldehyde with: (i)HCN ii) NH_2-OH.
viii. How is acetamide prepared from acetic acid?
ix. Give the two reactions in which H-atom of carboxylic acid is involved.

SECTION-II

Note Attempt any three questions. Each question carries equal marks: (8x3=24)

5. (a) Write a note on oxides as a periodic relationship in compounds. (4)
(b) Why Lithium shows peculiar behaviour? Give its any seven differences from other alkali metals. (4)
6. (a) Give eight uses of Nobel gases. (b) How is urea fertilizer is prepared in Pakistan? Describe the process in detail. (4+4)
7. (a) Discuss structure of methane on the basis of hybridization. (4)
(b) How Propyl Magnesium Bromide reacts with following? (i) CH_3COCH_3 (ii) CO_2. (2+2)
8. (a) How does ethyne react with (i) Hydrogen (ii) Halogen acid (iii) alkaline $KMnO_4$ (iv) 10% $H_2SO_4+HgSO_4$. (1x4)
(b) How sodium bisulphite reacts with (i) Formaldehyde (ii) Acetone Also write the general mechanism. (4)
9. (a) Define Friedel-Crafts acylation alongwith its example and mechanism. (4)
How can you prepare the following from Phenol? (i) Benzene (ii) Cyclohexanol (iii) 2, 4, 6-tribromopheol (1x4)
m phenoxide.

☆☆	Roll No_____

HSSC(Part-II)-A-2024
(For All Sessions)

Subject Code	8	4	8	4

Chemistry(Objective)

(GROUP-II)

Time:20 Minutes 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. Which one of the following is **NOT** present in all proteins?

(A) Carbon (B) Hydrogen (C) Nitrogen (D) Sulphur ●

2. For which crop, Ammonium Nitrate fertilizer is **NOT** used?

(A) Cotton (B) Wheat (C) Sugarcane (D) Paddy rice ●

3. PAN is an irritant to human beings and it affects:

(A) Eyes ● (B) Ears (C) Stomach (D) Nose

4. In purification of potable water, the coagulant used is:

(A) Nickel Sulphate (B) Copper Sulphate (C) Barium Sulphate (D) Aluminium Sulphate ●

5. The correct statement is:

(A) $Na^+ < Na$ ● (B) $Na^+ > Na$ (C) $C\bar{l} < Cl$ (D) $C\bar{l} = Cl$

6. The oxide of Be is:

(A) Acidic (B) Basic (C) Amphoteric ● (D) Neutral

7. The aluminium oxide is:

(A) Acidic (B) Amphoteric ● (C) Basic (D) Neutral

8. The laughing gas is chemically:

(A) NO (B) NO_2 (C) N_2O_4 (D) N_2O ●

9. Which halogen occurs naturally in a positive oxidation state?

(A) I_2 ● (B) F_2 (C) Br_2 (D) Cl_2

10. The strength of binding energy of transition elements depends upon:

(A) No. of electron pairs (B) No. of protons (C) No. of neutrons (D) No. of unpaired electrons ●

11. The chemist who synthesized urea from ammonium cyanate was:

(A) Berzelius (B) Kolbe (C) Wholer ● (D) Lavoisier

12. Synthetic rubber is made by polymerization of:

(A) Chloroform (B) Acetylene (C) Divinyl acetylene (D) Chloroprene ●

13. During nitration of benzene, the active nitrating agent is:

(A) NO_3 (B) $\dot{N}O_2$ ● (C) NO_2 (D) HNO_3

14. For which mechanisms, the first step involved is the same:

(A) E_1 and E_2 (B) E_2 and SN_2 (C) SN_1 and E_2 (D) E_1 and SN_1 ●

15 Ethanol can be converted into ethanoic acid by:

(A) Hydrogenation (B) Hydration (C) Oxidation ● (D) Fermentation

16. Ketones are prepared by the oxidation of:

(A) Primary alcohol (B) Secondary alcohol ● (C) Tertiary alcohol (D) Dimethyl ether

17. Which of the following is not a fatty acid?

(A) Propanoic acid (B) Acetic acid (C) Phthalic acid ● (D) Butanoic acid

Roll No _____

HSSC-(P-II)-A/2024

(For All Sessions)

Chemistry (Subjective)

(GROUP-II)

Time: 2:40 hours

Marks : 68

SECTION-II

2. Write short answers of any eight parts from the following: (8x2=16)

i. What are polymeric hydrides? Give example.

ii. What are the oxidation states of group $VII\ A$, and $VIII\ A$?

iii. What happens when Lithium Hydroxide is heated to red hot?

iv. Why is the aqueous solution of Na_2CO_3 alkaline in nature?

v. Why metal chelates are more stable than metal complexes?

vi. How Potassium Permanganate oxidizes oxalic acid?

vii. Give IUPAC names of following compounds: (i). $(CH_3)_2\ CHBr$ (ii) CH_2Cl_2

viii. How is carboxylic acid prepared from carbon dioxide and Grignard's reagent?

ix. What are the reasons for rancidity of oils and fats?

x. Write down any two functions of DNA.

xi. What is the repeating unit of polystyrene and Teflon?

xii. What are fertilizers? Why do we need them?

3. Write short answers of any eight parts from the following: (8x2=16)

i. Give ring test for the confirmation of the presence of nitrate ion in solution.

ii. P_2O_5 is a powerful dehydrating agent. Prove it by giving example.

iii. Why HF is weaker acid than HCL? Justify.

iv. What are disproportionation reactions? Give example.

v. Write short note on steam cracking.

vi. What are heterocyclic compounds? Give two examples.

vii. Convert Methyl Magnesium Bromide into methane

viii. State Markownikov's rule, give an example.

ix. Write a short note on acidity of ethyne.

x. How is oil spillage affecting the marine life?

xi. Are detergents are threat to aquatic life? Justify.

xii. Mention any two conditions which are required for the formation of smog.

4. Write short answers of any six parts from the following: (6x2=12)

i. What is water glass and how it is prepared?

ii. Why aluminium is used in making petrol and milk storage tanks?

iii. How is boric acid dehydrated stepwise when heated strongly?

iv. Give two objections to Kekule's formula of benzene.

v. Why are lower alcohols readily soluble in water?

vi. How would you prepare Bakelite from phenol?

vii. Prepare acetaldehyde and acetone by dry distillation method.

viii. Give two reactions of amino acids.

ix. Differentiate between complete reduction and partial reduction of acetic acid.

SECTION-II

Note Attempt any three questions. Each question carries equal marks: (8x3=24)

5. (a) Write down two similarities and two dissimilarities of hydrogen with Group IA elements. (04)

(b) Give the four points in which Beryllium differs from the other members of its own family. (04)

6. (a) Explain relative reactivities of the halogens as oxidizing agent. (04)

(b) Explain the process of setting of cement & give reactions taking place in first 24 hours and 1-7 days. (04)

7. (a) Discuss the structure of ethyne on the basis of hybridization. (04)

(b) Discuss two main factors which govern the reactivity of alkyl halides. (2+2=4)

8. (a) Explain free radical mechanism for the reaction of chlorine with methane in the presence of sunlight. (04)

(b) How HCN reacts with (i) Formaldehyde (ii) Acetone? Also write down the mechanism. (2+2=4)

9. (a) Predict the major products of bromination of the following compounds: (04)
(a) Toluene (b) Nitrobenzene (c) Phenol (d) Benzaldehyde

(b) What are the alcohols? Write the reaction of alcohols which show: (i) Oxidation (ii) Dehydration (iii) Substitution (04)

1224 Warning:- Please write your Roll No. in the space provided and sign. Roll No----------

(Inter Part – II) (Session 2020-22 to 2022-24) Sig. of Student ----------

Chemistry (Objective) Group – I Paper (II)

Time Allowed:- 20 minutes PAPER CODE 4481 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) Classification of elements in the modern periodic table is based on
(A) Law of Triads (B) Law of octaves (C) Moseley law ● (D) Mendeleev's periodic law

2) Chile saltpetre has the chemical formula
(A) $NaNO_3$ ● (B) KNO_3 (C) $CaCO_3$ (D) Na_2CO_3

3) Aluminium oxide is
(A) Acidic Oxide (B) Basic Oxide (C) Amphoteric Oxide ● (D) Non of these

4) Aqua Regia can dissolve noble metals due to the formation of
(A) Nitrosyl chloride ● (B) Nascent Nitrogen (C) Nitric oxide (D) Nitrous Acid

5) Which halogen occurs naturally in a positive oxidation state
(A) Flourine (B) Chlorine (C) Bromine (D) Iodine ●

6) Group VI B of Transition elements contain
(A) Zn, Cd, Hg (B) Fe, Ru, Os (C) Cr, Mo, W ● (D) Mn, Te, Re

7) Select from the following the one which is alcohol
(A) $CH_3 - CH_2 - OH$ ● (B) $CH_3 - O - CH_3$ (C) $CH_3 - COOH$ (D) $CH_3 - CH_2 - Br$

8) Preparation of vegetable ghee involves
(A) Halogenation (B) Hydrogenation ● (C) Hydroxylation (D) Dehydrogenation

9) Which compound is the most reactive one
(A) Benzene (B) Ethene ● (C) [illegible] (D) Ethyne

10) Nucleophile is usually
(A) Basic in character (B) Acidic in character (C) Basic and positively charged (D) Basic and Negatively charged ●

11) Which of the following compound is called Universal Solvant?
(A) H_2O ● (B) CH_3OH (C) C_2H_5OH (D) $CH_3 - O - CH_3$

12) Acetone react with HCN to form cyanohydrin. It is an example of
(A) Electrophillic addition (B) Electrophillic substitution (C) Nucleophillic addition ● (D) Nucleophillic substitution

13) Which acid is used in manufacture of synthetic fiber
(A) Formic Acid (B) Acetic Acid ● (C) Oxalic Acid (D) Carbonic Acid

14) Which one of the following element is not present in all proteins.
(A) Carbon (B) Hydrogen (C) Nitrogen (D) Sulpher ●

15) Micronutrient element are required in Quantity
(A) 4 – 40 gm (B) 6 – 200 gm ● (C) 6 – 200 kg (D) 4 – 40 kg

16) The pH range of acid rain is
(A) 7 – 6.5 (B) 6.5 – 6 (C) 6 – 5.6 (D) less than 5 ●

17) Which one of the following substance cause acid rain?
(A) SO_2 ● (B) Hydro carbons (C) Chloroflourocarbons (D) O_3

1231 -- 1224 -- 14000 (1)

Warning:- Please, do not write anything on this question paper except your Roll No.

1224 (Inter Part - II) (Session 2020-22 to 2022-24)

Chemistry (Subjective) (Group I) Paper (II)

Time Allowed: 2.40 hours Maximum Marks: 68

Section ---------- I

2. **Answer briefly any Eight parts from the followings:-** **8 × 2 = 16**

(i) Why 2nd ionization energy is greater than 1st ionization energy?
(ii) Why is diamond non-conductor but graphite is conductor?
(iii) What is general trend for the solubility of sulphates of alkaline earth metals?
(iv) Why lime is added to acidic soil? (v) How does $K_2Cr_2O_7$ oxidize the H_2S and $FeSO_4$?
(vi) How zinc coating prevents iron from corrosion?
(vii) How antiknocking agents are prepared from alkyl halides? (viii) What is wurtz synthesis?
(ix) What is function of nucleic acid? (x) How temperature affects the activity of enzymes?
(xi) How triglycerides are hydrolyzed? (xii) What is meant by dry cleaning in paper manufacturing?

3. **Answer briefly any Eight parts from the followings:-** **8 × 2 = 16**

(i) Why N_2O is called laughing gas? (ii) Write down any four uses of Nitric acid.
(iii) What are Freons and Teflon? (iv) Why HF is weaker acid than HCl? Justify.
(v) Define aromatic compound by giving two examples. (vi) How vital theory was rejected?
(vii) Convert methane into methyl alcohol. (viii) Write down the industrial preparation of Ethyne.
(ix) Mention the four physical properties of Ethene.
(x) Mention any two conditions which are required for the formation of smog.
(xi) Write short note on chemical oxygen demand. (COD)
(xii) Is detergent are threat to aquatic life? Justify.

4. **Answer briefly any Six parts from the followings:-** **6 × 2 = 12**

(i) Why are liquid silicones preferred over ordinary organic lubricants?
(ii) What is the action of an aqueous solution of borax on litmus?
(iii) How will you convert boric acid into borax and vice versa.
(iv) What is Wurtz-Fittig reaction? (v) How bakelite is produced? Give reaction.
(vi) How methanol and ethanol can be differentiated?
(vii) What is Tollen's test? Give reaction. (viii) How carboxylic acid is prepared from alkene?
(ix) Differentiate between essential and non-essential amino acids.

Section ---------- II

Note: Attempt any three questions. **(8 × 3 = 24)**

5. **(a)** What are the improvements made in the Mendeleev's periodic table?
(b) Describe the role of Gypsum in agriculture and industry. (Any four points of each)

6. **(a)** What happens when bleaching powder reacts with
(i) dil H_2SO_4 (ii) excess of conc. H_2SO_4 (iii) NH_3 (iv) CO_2
(b) What is meant by setting of cement? What are the reactions taking place in first twenty four hours and between one to seven days?

7. **(a)** Discuss sp^2 – hybridization with a suitable example.
(b) How would you prepare following compounds from Grignard reagent?
(i) 1-butanol (ii) 2-butanol (iii) Cyanogen chloride (iv) ethane

8. **(a)** How is ethene prepared by Kolbe's electrolytic method. Give its mechanism also.
(b) Give the reactions of acetone with. (i) HCN (ii) NH_2OH (iii) NH_2NH_2 (iv) $NaHSO_3$

9. **(a)** Describe oxidation reactions of Benzene and alkyl benzene.
(b) Explain the following terms
(i) Absolute alcohol (ii) Methylated spirit (iii) Rectified spirit (iv) Denaturing of alcohols

1232 -- 1224 -- 14000

1224 Warning:- Please write your Roll No. in the space provided and sign. Roll No----------

(Inter Part – II) (Session 2020-22 to 2022-24) Sig. of Student ----------

Chemistry (Objective) Group – II Paper (II)

Time Allowed:- 20 minutes PAPER CODE 4482 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) Which of the following metal does not form ionic hydride.
(A) Ba (B) Mg ● (C) Ca (D) Sr

2) The mineral $CaSO_4.2H_2O$ has the general name.
(A) Gypsum ● (B) Dolomite (C) Calcite (D) Epsom salt

3) Which of the following element is not present abundantly in earth's crust?
(A) Silicon (B) Aluminium (C) Sodium ● (D) Oxygen

4) Which catalyst is used in contact process
(A) Fe_2O_3 (B) V_2O_5 ● (C) SO_3 (D) Ag_2O

5) Which halogen will react spontaneously with Au to produce Au^{+3}?
(A) Br_2 (B) F_2 (C) I_2 (D) Cl_2 ●

6) The strength of binding energy of transition elements depends on
(A) Number of electron pairs (B) Number of unpaired electrons ● (C) Number of neutrons (D) Number of protons

7) 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 ●

8) Synthetic rubber is made by polymerization of
(A) Chloroform (B) Acetylene (C) Divinylacetylene (D) Chloroprene ●

9) The electrophile in aromatic sulphonation is
(A) H_2SO_4 (B) HSO_3^- (C) SO_3 ● (D) SO_3^+

10) Ethyl magnesium bromide react with water to form
(A) Ethane ● (B) Methane (C) Propane (D) Butane

11) Rectified spirit contains alcohol about
(A) 80% (B) 85% (C) 90% (D) 95% ●

12) The carbon atom of a carbonyl group is
(A) sp hybrid (B) sp^2 hybrid ● (C) sp^3 hybrid (D) None of those

13) Which of the following is not a fatty acid?
(A) Propanoic Acid (B) Acetic Acid (C) Phthalic Acid ● (D) Butanoic Acid

14) The reaction between fat and NaOH is called
(A) esterification (B) Hydrogenolysis (C) Fermentation (D) Saponification ●

15) Ammonium Nitrate fertilizer is not used for which crop.
(A) Cotton (B) Wheat (C) Sugar cane (D) Paddy rice ●

16) Ecosystem is a smaller unit of
(A) Lithosphere (B) Hydrosphere (C) Biosphere ● (D) Atmosphere

17) Which gas is not a pollutant
(A) SO_2 (B) CO (C) NO_2 (D) CO_2 ●

Sargodha Board-2024

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1224 (Inter Part - II) **(Session 2020-22 to 2022-24)**

Chemistry (Subjective) **(Group II)** **Paper (II)**

Time Allowed: 2.40 hours **Maximum Marks: 68**

Section ---------- I

2. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) What improvements were made in Mendleev's periodic table?
(ii) The radius of Na is 157 pm while that of Na^+ is 95 pm. Why?
(iii) What happens when Lithium carbonate and Lithium nitrates are heated?
(iv) Why is calcium important for plant growth? **(v)** How does acidified $KMnO_4$ Oxidize $FeSO_4$ and oxalic acid?
(vi) Why do the transition element show variable valency?
(vii) Why alkyl Iodides are the most reactive among alkyl halides?
(viii) What is leaving group. Give two examples. **(ix)** Write name of factors with affect the enzyme activity.
(x) What are the Differences between DNA and RNA? **(xi)** Define acid number and Iodine number with example.
(xii) Why wet process is favourable for manufacturing of cement in Pakistan?

3. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) NO_2 is a strong oxidizing agent. Prove the truth of this statement giving example.
(ii) Write down any four uses of sulphuric acid. **(iii)** Why HF is weaker acid than HCL? Justify.
(iv) What are Freons and Teflon? **(v)** Draw the various isomer of Pentane (C_5H_{12})
(vi) Why there is no free rotation around a double bond and a free rotation around a single bond. Justify.
(vii) How does ethyne react with (a) Halogen acid (b) Ammonical cuprous chloride
(viii) Write short note on acidity of Ethyne. **(ix)** Write down any four uses of ethene.
(x) Mention any two conditions which are required for the formation of smog.
(xi) Is detergents are threat to aquatic life? Justify. **(xii)** Write short note on dissolved oxygen (DO).

4. Answer briefly any Six parts from the followings:- **6 × 2 = 12**

(i) What is the alkanoic acid. How it is prepared from alkanol?
(ii) Justify the acidic and basic character of amino acids.
(iii) Prepare borax from (a) Colemanite (b) Boric acid
(iv) How "Al" reacts with hydrogen and halogen? **(v)** Justify "CO_2" is non polar in nature.
(vi) Write the name and structure of two aromatic compounds containing two benzene rings.
(vii) Why phenol is more acidic than alcohol? **(viii)** Ethanol has highest boiling point than di ethyl ether.
(ix) Write the oxidation reaction of aldehyde with (a) $K_2Cr_2O_7 / H_2SO_4$ (b) Tollen's reagent

Section ---------- II

Note: Attempt any three questions. **(8 × 3 = 24)**

5. (a) Define periodic table. What improvements are made in Mendeleev's periodic table?
(b) How sodium metal is produced by Down's cell. Sketch labelled Down's cell.

6. (a) What are "Disproportionation reactions"? Explain your answer with the reaction of chlorine with hot and cold NaOH.
(b) What do you understand by the term "Setting of cement"? Also discuss the reactions taking place in first 24 hours?

7. (a) What are the various sources of organic compounds? Give significance of Coal amongst these sources.
(b) Using ethyl bromide as a starting material how would you prepare the following compounds?
(i) n-butane (ii) Ethyl alcohol (iii) Ethene (iv) Ethane

8. (a) Explain the following reactions. (i) Ozonolysis of ethene (ii) Oxidation of ethyne by $KMnO_4$
(b) What is Cannizzaro's reaction? Write down its mechanism.

9. (a) Describe the stability of Benzene molecule by estimating Heats of Hydrogenation.
(b) Explain the following terms using ethyl alcohol as an example.
(i) Oxidation (ii) Dehydration (iii) Esterification (iv) Ether formation

1234 -- 1224 -- 10000

Chemistry | **Group: 1st** | **HSSC(12th)1stAnnual 2024** | Roll No:_____(written by the candidate only)

Paper : II | Objective (iv) | Code | 8 | 4 | 8 | 7 | 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 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.	In group V-A elements, the most electronegative is:	N ●	P	Sb	Bi
2.	Most of the elements of group I A are:	Crystalloids	Metals ●	Metalloids	Non metals
3.	During nitration of benzene, the active nitrating agent is:	NO_3	NO_2^-	NO_2^+ ●	HNO_3
4.	Vinyl acetylene combines with HCl to form:	Poly acetylene	Benzene	Chloroprene ●	Divinyl acetylene
5.	Which is the strongest acid?	HClO	$HClO_2$	$HClO_3$	$HClO_4$ ●
6.	Total number of transition elements are:	10	14	40	58 ●
7.	The state of hybridization of carbon atom in methane is:	sp^3 ●	sp^2	sp	dsp^2
8.	Which element belongs to group IV A of periodic table?	Barium	Iodine	Lead ●	Oxygen
9.	Which one of the given is not an alkali metal?	Francium	Caesium	Rubidium	Radium ●
10.	Vegetable oil is:	Un-saturated fatty acid ●	Glycerides of unsaturated acid	Glycerides of saturated fatty acid	Essential oils obtained from plants
11.	For which crop, ammonium nitrate fertilizer is not used:	Cotton	Wheat	Sugarcane	Paddy rice ●
12.	Acetic acid is prepared by:	Distillation	Fermentation ●	Ozonolysis	Esterification
13.	Ketones are prepared by oxidation of:	Primary alcohol	Secondary alcohol ●	Tertiary alcohol	Ether
14.	Which compound shows the hydrogen bonding?	C_2H_6	C_2H_5Cl	CH_3-O- CH_3	C_2H_5 OH ●
15.	The pH range of acid rain is:	7- 6.5	6.5 - 6	6 - 5.6	Less than 5 ●
16.	The co-agulant used in raw water to precipitate suspended impurities is:	Caustic soda	Lime water	Alum ●	Soda ash
17.	During the S_N1 reaction, the fast step involves:	Breakage of covalent bond	Formation of carbocation	Transition state	Attack of nucleophile ●

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Chemistry | **Group: 1st** | **HSSC(12th)1stAnnual 2024** | Roll No:_____(written by the

Paper : II | Time: 2:40 Hours | Subjective | M.

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. Why the size of an anion is greater than its parent atom? Give example also.
ii. The hydration energies of the ions are in the given order, prove it. $Al^{+3} > Mg^{+2} > NA^{+1}$
iii. Why is potassium superoxide used in breathing equipments?
iv. How is gypsum converted into Plaster of Paris?
v. Write down the systematic names of the given: a) $[Fe(CO)_5]$. b) $K_2[PtCl_6]$.
vi. Write down the structure of $Cr_2O_7^{-2}$ and MnO_4^{-1}.
vii. Define β-elimination reactions with a suitable example.
viii. How anti-knocking agents are prepared from methyl and ethyl chloride?
ix. What is denaturation of proteins?
x. Define isoenzymes.
xi. Differentiate between thermosetting and thermoplastic polymer. Give example.
xii. What do you mean by "setting of cement?"

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

i. How PCl_3 reacts with H_2O and C_2H_5OH?
ii. Why does aqua regia dissolve gold?
iii. Why HF is weaker acid than HCl?
iv. What are Freons and Teflon?
v. What is "Octane number" and "knocking"?
vi. What is carbonization of coal?
vii. Which rule is followed by alkenes to addition of H_2SO_4 in I-Butene?
viii. Prepare Cis and trans-butene from 2-butyne.
ix. Write down the IUPAC names of the given compounds: a) $(C_6H_5)_2CH_2$ b) $(CH_3CH_2CH_2)_3CH$
x. What are leachates?
xi. What are the advantages of recycling of paper? (in two points)
xii. What is acid deposition?

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

i. Write down chemistry of borax bead test.
ii. Why is nitric acid frequently transported in aluminium containers?
iii. CO_2 is a gas while SiO_2 is a solid. Give reason.
iv. What is Wurtz-Fitting reaction?
v. What is denaturing of alcohols?
vi. What is Williamson's synthesis of ether?
vii. What is formalin? How is it prepared in laboratory?
viii. How is acetic acid prepared by hydrolysis of ester?
ix. Elaborate acidic and basic character of amino acids.

SECTION-C

Note: Attempt any THREE questions. Each Question carries EIGHT (8) marks. (8x3=24)

5. (a) What are the improvements made in the Mendeleeve's periodic table? 4

(b) Describe with diagram, the manufacture of sodium by Down's Cell method. 4

6. (a) Why Fluorine shows peculiar behaviour? (Any four reasons) 4

(b) Describe briefly the given steps during the preparation of paper: i-Cleaning ii-Screening 4

7. (a) What is orbital hybridization? Explain sp^3 hybridization with an example. 4

(b) How does ethyl magnesium Iodide react with: 4

i. CO_2 ii. CH_3 - CHO iii. H_2O iv. C_2H_5OH

8. (a) How will you prepare alkynes by Kolb's electrolysis? 4

(b) How does acetaldehyde react with $NaBH_4$? Give mechanism of reaction. 1+3

9. (a) Write down a note on Atomic orbital treatment of benzene. 4

(b) Mention any two reactions of alcohol in which C – O bond is broken and any two reactions of alcohol in which O – H bond is cleared. 2+2

Chemistry | **Group: 2nd** | **HSSC(12th)1st Annual 2024** | Roll No:_____(written by the candidate only)

Paper : II | Objective (ii) | Code | 8 | 4 | 8 | 4 | 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 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.	The presence of a double bond in a compound is the sign of:	Saturation	Unsaturation ●	Substitution	None of these
2.	During nitration of benzene, the reactive nitrating agent is:	NO_3	NO_2^+ ●	NO_2	HNO_3
3.	Order of a typical S_N2 reaction in case of primary alkyl halide is:	1	2 ●	3	Zero
4.	Methyl alcohol is not used:	As a solvent	As an anti-freezing agent	As a substitute for petrol ●	For denaturing of ethyl alcohol
5.	Which of the given compounds will not give Iodoform test on treatment with I_2/NaOH?	Acetaldehyde	Acetone	Butanone	3-pentanone ●
6.	Acetic acid is manufactured by:	Distillation	Fermentation ●	Ozonolysis	Esterification
7.	Which of the given polymers is a synthetic polymer?	Animal fat	Starch	Cellulose	Polyester ●
8.	The nitrogen present in some fertilizers helps plants:	To fight against diseases	To produce fat	To produce protein ●	To undergo photosynthesis
9.	Ecosystem is a smaller unit of--------.	Biosphere ●	Atmosphere	Lithosphere	Hydrosphere
10.	The value of -------- is a direct measure of chemically oxidizable matter in water.	COD ●	BOD	DO	None of these
11.	In t-butyl alcohol, the tertiary carbon is bonded to -------- hydrogen atom/s.	2	3	1	No ●
12.	The colour of transition metal complexes, is due to:	d-d transition of electrons ●	Ionization	Paramagnetic nature	Loss of S-electrons
13.	The anhydride of $HClO_4$ is:	ClO_3	ClO_2	ClO_5	Cl_2O_7 ●
14.	The brown gas is formed, when metal reduces HNO_3 to:	N_2O_5	N_2O_3	NO_2 ●	NO
15.	Boric Acid can not be used:	As antiseptic in medicine	For washing eyes	In soda bottles ●	For enamels and glazes
16.	Which of the given sulphates is not soluble in water?	Sodium sulphate	Potassium sulphate	Zinc sulphate	Barium sulphate ●
17.	Na forms --------oxide:	Basic ●	Amphoteric	Acidic	Super

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Chemistry | **Group: 2nd** | **HSSC(12th)1stAnnual 2024** | Roll No:_____(written by .

Paper : II | Time: 2:40 Hours | Subjective

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 =

i. Why diamond is a non conductor and graphite is a good conductor?
ii. The hydration energy of Ions is in the given order, $Al^{+3} > Mg^{+2} > Na^{+1}$, give reason.
iii. What is milk of magnesia and what is its use?
iv. What is Gypsum and how is it converted into Plaster of Paris?
v. Why melting and boiling points are maximum in the middle of the series of d-block element?
vi. What is the reason for the development of colours in the compound of transition elements?
vii. How alkyl iodide is prepared from alcohol?
viii. What are the factors which are responsible for the reactivity of alkyl halide?
ix. What is degree of polymerization? Give one example.
x. Define Homopolymer and Copolymer, give example for each polymer also.
xi. What are epoxy resins? Give their important uses.
xii. Write down essential qualities of a good fertilizer.

3. Write short answers to any EIGHT parts. (8 x 2

i. Draw structure of two oxyacids of nitrogen.
ii. Why does the phosphorous show more than one valency although it is not a transition element?
iii. Who do the noble gases have low melting and boiling points?
iv. Give two methods to prepare ClO_2.
v. What is catalytic cracking? Give its importance.
vi. What are Cis. and trans isomers? Give example.
vii. Why is the boiling point of n-butane higher than that of isobutane?
viii. Why alkanes are less reactive than alkenes?
ix. Give two methods to prepare alkanes from alkyl halides.
x. What are secondary pollutants? Give example.
xi. How are oxides of sulphur produced in environment? Give their harmful effects in human life.
xii. Define oxidizing and reducing smog.

4. Write short answers to any SIX parts. (6 x 2 =

i. Write down any four uses of aluminium.
ii. What do you know about chemical garden?
iii. How does borax serve as water softening agent?
iv. Convert benzene into acetophenone.
v. Write down structural formulas for: (a) Glycol (b) Carbolic Acid
vi. How will you distinguish between methanol and ethanol?
vii. Give one industrial method for the preparation of formaldehyde.
viii. Write down a short note on acidic and basic characters of amino acid.
ix. Convert methyl nitrile into Acetic Acid.

SECTION-C

Attempt any THREE questions. Each Question carries EIGHT (8) marks. (8x3=2

5. (a) Describe the defects in Mendeleev's periodic table. Give two improvements made in it by Mosley.
   (b) Discuss the trends in chemical properties of alkaline earth metals (any four).
6. (a) Write down any four differences of F_2 with its group members.
   (b) Define the term "setting of cement". Write down the reactions involved in first 24 hours and 1-7 days.
7. (a) What is orbital hybridization? Explain sp^2-hybridization in ethene.
   (b) Differentiate between S_N1 and S_N2 reaction mechanisms.
8. (a) Write down any two methods for the preparation of alkanes.
   (b) Give mechanism for acid catalysed nucleophilic addition reaction of ethanol and propanone with hydroxylamine.
9. (a) What is Friedel-crafts acylation? Write down its mechanism for the preparation of acetophenone.
   (b) Discuss the commercial preparation of methyl alcohol from water gas in detail.

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