

Paper Code		2024 (1 st -A)			Roll No: _____	
Number: 4483		INTERMEDIATE PART-II (12 th Class)				
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 ₃ Cl	CCl ₄	CH ₂ Cl ₂	CHCl ₃ ●	
2	Benzene cannot undergo reaction like:	Elimination ●	Addition	Oxidation	Substitution	
3	Which of given is electrophile?	NH ₃	H ₂ O	BF ₃ ●	Cl ₂	
4	Which compound shows strong hydrogen bonding?	C ₂ H ₆	C ₂ H ₄	C ₂ H ₅ -O-C ₂ H ₅	C ₂ H ₅ OH ●	
5	Which of the given compound will react with Tollen's reagent?	$\begin{array}{c} O \\ \\ CH_3-C-OH \end{array}$	$\begin{array}{c} O \\ \\ CH_3-C-H \end{array}$ ●	$\begin{array}{c} O \\ \\ CH_3-C-CH_3 \end{array}$	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° C	800° C ●	1000° C	1200° C	
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 ₂ B ₄ O ₇	Na ₂ CO ₃ ·H ₂ O	
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) ₄ Cl(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 (12 th Class)		2024 (1 st -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 _N 2 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 ₃ PO ₃ act as a reducing agents?		
(v)	Give four uses of H ₂ SO 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



Paper Code Number: 4484		2024 (1 st -A) INTERMEDIATE PART-II (12 th 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 <input checked="" type="radio"/>	Polyester fibre
2	For which crop, ammonium nitrate fertilizer is not used?	Cotton	Wheat	Sugar cane	Paddy rice <input checked="" type="radio"/>
3	Which of following is better to disinfect water?	Cl ₂	O ₂	O ₃ <input checked="" type="radio"/>	KMnO ₄
4	The main pollutant of leather tanneries in the waste water is due to the salt of:	Lead	Chromium(VI) <input checked="" type="radio"/>	Copper	Chromium(III)
5	Zn, Cd, Hg in Mendeleev's periodic table, were placed with:	Noble metals	Alkaline earth metals <input checked="" type="radio"/>	Inner transition metals	Coinage metals
6	Down's cell is used to prepare:	Sodium carbonate	Sodium hydroxide	Sodium bicarbonate <input checked="" type="radio"/>	Sodium metal
7	Boric acid cannot be used:	As antiseptic in medicine	For washing eyes	In soda bottles <input checked="" type="radio"/>	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 <input checked="" type="radio"/>	A transition element	An alkali metal	A halogen
9	Formic acid on reaction with dehydrating agent give:	CO ₂ , CO, H ₂ O	CO, OH ⁻	CO, H ₂ O <input checked="" type="radio"/>	CO and CO ₂
10	The strength of binding energy of transition elements depends upon:	Number of electron pairs	Number of unpaired electrons <input checked="" type="radio"/>	Number of neutrons	Number of protons
11	The state of hybridization of carbon atom in alkane is:	sp ³ <input checked="" type="radio"/>	sp ²	sp	dsp ²
12	H ₂ C = CH - C ≡ CH and conc HCl on reaction give:	Polyacetylene	Benzene	Chloroprene <input checked="" type="radio"/>	Divinyl acetylene
13	Amongst the following, the compound that can be most readily sulphonated is:	Toluene <input checked="" type="radio"/>	Benzene	Nitrobenzene	Chlorobenzene
14	Which one is more reactive alkyl halide?	R - F	R - Cl	R - Br	R - I <input checked="" type="radio"/>
15	Methyl alcohol is not used:	As a solvent	As a substitute for petrol <input checked="" type="radio"/>	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 <input checked="" type="radio"/>	Nucleophilic substitution
17	Which acid is used in the manufacturing of synthetic fibre?	Formic acid	Oxalic acid	Carbonic acid	Acetic acid <input checked="" type="radio"/>

Multan Board-2024

INTERMEDIATE PART-II (12 th Class)		2024 (1 st -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 nitrogenous 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 → ? (ii) HNO ₂ + CO(NH ₃) ₂ → ?		
(iii)	Why HF is weaker acid than HCl?		
(iv)	How does iodine pentoxide (I ₂ O ₅) react with H ₂ O 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 _N 2 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 ₂ OH		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

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CHEMISTRY PAPER-II GROUP-I		
TIME ALLOWED: 2.40 Hours	SUBJECTIVE	MAXIMUM MARKS: 68
NOTE: Write same question number and its parts number on answer book, as given in the question paper.		

SECTION-I

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

SECTION-II



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

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

SECTION-I

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

SECTION-II



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

Paper Code
Number: 4481

2023 (1st-A)
INTERMEDIATE PART-II (12th Class)

Roll No: _____

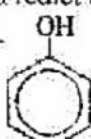


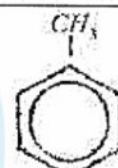
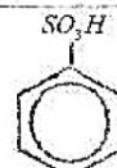
CHEMISTRY PAPER-II GROUP-I

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	Pick the element having least melting point among alkaline earth metals?	Be	Ca	Mg	Sr
2	The mineral sylvite has the chemical formula:	NaCl	KCl	MgCO ₃	CaCO ₃
3	Boric acid cannot be used:	As antiseptic in medicine	For washing eyes	In soda bottles	For enamels and glazes
4	Oxidation of NO in air produces:	N ₂ O	N ₂ O ₃	N ₂ O ₅	N ₂ O ₄
5	Which halogen does occur naturally in positive oxidation state?	I ₂	Br ₂	Cl ₂	F ₂
6	The purest form of commercial iron is:	Pig iron	Cast iron	Wrought iron	Steel
7	Which one of the following is not heterocyclic compound?	Naphthalene	Pyridine	Furan	Pyrrole
8	The reaction step shown is known as: $H_3C-CH_2-OSO_3H + H_2O \xrightarrow{160^\circ C} H_3C-CH_2-OH + H_2SO_4$	Hydrolysis	Hydration	Hydroxylation	Hydrogenation
9	Predict the product in the reaction:  + Zn → ?				
10	For which mechanism the first step involved is the same?	E ₁ and E ₂	E ₂ and S _N 2	S _N 1 and E ₂	E ₁ and S _N 1
11	Which compound shows maximum hydrogen bonding with water?	C ₂ H ₆	C ₂ H ₅ Cl	C ₂ H ₅ OH	CH ₃ -O-CH ₃
12	Which among the following is known as Carboic acid?	C ₆ H ₅ OH	C ₂ H ₅ OH	CH ₃ COOH	CH ₃ -O-CH ₃
13	Ketones are prepared by oxidation of:	Primary alcohol	Secondary alcohol	Tertiary alcohol	All of these
14	Acetamide is prepared by heating:	Ammonium acetate	Methyl cyanide	Ethyl acetate	Ethyl cyanide
15	Natural starch consists of how much percentage of amylose?	50%	80 – 90%	10 – 20 %	40%
16	Micronutrients are required in the quantity ranging from:	4 – 40 g	6 – 200 g	6 – 200 kg	4 – 40 kg
17	A single chloride free radical can destroy how many ozone molecules?	10 ⁶	10 ⁴	10 ²	10 ³

Paper Code
Number: 4488

2023 (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	Vegetable fats are:	Unsaturated fatty acids	Essential oils obtained from plants	Glycerides of saturated fatty acids	Glycerides of unsaturated fatty acids
2	Major nitrogen fertilizers are:	Urea and ammonium nitrate	Urea and super phosphate	Ammonia and DAP	Diammonium phosphate only
3	The substances which directly kill the unwanted organisms are called:	Fungicides	Insecticides	Pesticides	Herbicides
4	Mark the correct statement: <div style="text-align: center; border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="font-size: 1.2em; color: purple;">pakcity.org</p> </div>	Metallic character increases down the group.	Metallic character increases from left to right along a period.	Metallic character remains the same down the group.	Metallic character remains the same from left to right along a Period.
5	The mineral ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) has the general name:	Epsom salt	Dolomite	Calcite	Gypsum
6	Which element forms an ion with charge +3?	Beryllium	Aluminium	Carbon	Silicon
7	Which of the following species has the maximum number of unpaired electrons?	O_2	O_2^+	O_2^-	O_2^{2-}
8	Which of the following hydrogen halide is the weakest acid in solution?	HI	HBr	HF	HCl
9	Coordination number of Pt in $[\text{PtCl}(\text{NO})_2(\text{NH}_3)_4]$ is:	2	4	1	6
10	A double bond consists of:	Two sigma bonds	One sigma and one Pi-bond	One sigma and two Pi-bonds	Two Pi-bonds
11	β, β' -dichloroethyl sulphide is commonly known as:	Mustard gas	Laughing gas	Phosgene gas	Bio-gas
12	Amongst the following, the compound that can be most readily sulphonated is:	Nitrobenzene	Benzene	Toluene	Chlorobenzene
13	When CO_2 is made to react with ethyl magnesium iodide, followed by acid hydrolysis, the product formed is:	Propane	Propanoic acid	Propanal	Propanol
14	The solution of which acid is used for manufacture of pickles:	Acetic acid	Formic acid	Benzoic acid	Butanoic acid
15	Which of the following reagent will react with ketones?	Tollen's reagent	Fehling's reagent	Benedict's reagent	Grignard's reagent
16	Which compound will have the maximum repulsion with H_2O ?	$\text{C}_2\text{H}_5\text{OH}$	$\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$	C_6H_6	$\text{CH}_3-\text{O}-\text{CH}_3$
17	Which compound is used as anti-freezing agent in automobile radiator?	CH_3OH	$\text{CH}_3-\text{O}-\text{CH}_3$	$\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$	$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$

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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) The chemist who synthesized urea from ammonium cyanate was:
 (A) Berzelius (B) Kolbe (C) Wholer (D) Lavoisier
- (2) Synthetic rubber is made by polymerization of:
 (A) Chloroform (B) Acetylene (C) chloroprene (D) Divinylacetylene
- (3) Which of the following acids can be used as a catalyst in Friedal-Craft reactions?
 (A) $AlCl_3$ (B) HNO_3 (C) $BeCl_2$ (D) $NaCl$
- (4) The rate of $E1$ reaction depends upon:
 (A) The concentration of substrate (B) The concentration of nucleophile
 (C) The concentration of substrate as well as nucleophile (D) None of these
- (5) Which compound will have maximum repulsion with water?
 (A) CH_3CH_2OH (B) $CH_3CH_2CH_2-OH$ (C) C_6H_5-OH (D) C_6H_6
- (6) Cannizzarro's reaction is not given by:
 (A) Formaldehyde (B) Acetaldehyde (C) Benzaldehyde (D) Trimethylacetaldehyde
- (7) Which of the following compounds will react with Tollen's Reagent?
 (A) CH_3COH (B) CH_3COCH_3 (C) CH_3COOH (D) $CH_3 \cdot CO \cdot CH_2 \cdot CH_3$
- (8) The solution of which acid is used for seasoning of food?
 (A) Formic acid (B) Benzoic acid (C) Acetic acid (D) Butanoic acid
- (9) A carboxylic acid contains:
 (A) A carboxylic group (B) A hydroxyl group (C) Alcoholic group (D) Keto group
- (10) For which crop, ammonium nitrate fertilizer is not used:
 (A) Sugar cane (B) Paddy Rice (C) Cotton (D) Wheat
- (11) Mark the correct statement:
 (A) Metallic character remains same down the group
 (B) Metallic character remains the same from left to right along a period
 (C) Metallic character increases from left to right along a period
 (D) Metallic character increases down the group
- (12) Chile saltpetre has the chemical formula:
 (A) $NaNO_3$ (B) KNO_3 (C) KNO_2 (D) KNO
- (13) Which metal is used in the thermit process because of its reactivity?
 (A) Iron (B) Zinc (C) Aluminium (D) Copper
- (14) Out of all the elements of group VA the highest ionization energy is possessed by:
 (A) N (B) P (C) Sb (D) Bi
- (15) Which of the following hydrogen halide is the weakest acid in the solution?
 (A) HF (B) HBr (C) HI (D) HCl
- (16) Hydrogen Bond is the strongest between the molecules of:
 (A) HI (B) HF (C) HCl (D) HBr
- (17) Which of the following is a non-typical transition element?
 (A) Cr (B) Mn (C) Zn (D) Fe

NOTE: Write same question number and its part number on answer book,
as given in the question paper.

SECTION-I

2. Attempt any eight parts.

8 × 2 = 16

- (i) Define electron affinity with example.
- (ii) Give two resemblances of Hydrogen with group-IV elements.
- (iii) Give chemical formula of Chrysoberyl and Asbestos.
- (iv) Give two advantages of Down's Cell.
- (v) Write two similarities between Carbon and Silicon.
- (vi) Which property of Aluminium is useful in flash photography?
- (vii) Discuss the Chemistry of Borax Bead Test.
- (viii) How Aqua Regia reacts with Gold?
- (ix) How Arsenic is removed in contact process?
- (x) Which raw material is used in the manufacturing of Cement?
- (xi) Give two benefits of Phosphatic fertilizers.
- (xii) Why 2% Gypsum is added into Cement?

3. Attempt any eight parts.

8 × 2 = 16

- (i) Name the factors affecting the oxidizing power of halogens.
- (ii) Write any four properties of HF.
- (iii) Give reaction of chlorine with cold and hot NaOH.
- (iv) Define paramagnetic and diamagnetic substances.
- (v) What are d-d transitions in complexes?
- (vi) Write objections to Kekule's formula of Benzene.
- (vii) How is benzene prepared from acetylene?
- (viii) Give any two applications of iodoform test.
- (ix) Write two uses of Formaldehyde.
- (x) What happens when the following compounds are heated?
(a) Calcium Acetate (b) Ammonium Acetate
- (xi) How acetic acid is converted to ethanol and ethane?
- (xii) Give reaction to prepare carboxylic acid from Grignard's reagent.

4. Attempt any six parts.

6 × 2 = 12

- (i) What are alicyclic and aromatic compounds, give one example of each.
- (ii) Define Metamerism, give an example.
- (iii) State Markownikov's rule. Give one example.
- (iv) Give the formation of 1, 1 - Dibromoethane from alkyne.
- (v) How would you prepare the following compounds from ethyl bromide?
(a) Ethyl alcohol (b) Ethyl Cyanide
- (vi) Define electrophile. Give its examples.
- (vii) Write down two reactions of alcohol in which C - O bond is broken.
- (viii) What is Lucas test?
- (ix) What is Raney Nickel? How it can be prepared?

SECTION-II

8 × 3 = 24

NOTE: Attempt any three questions.

- 5.(a) Justify the position of hydrogen at top of group IA and IVA. 4
- (b) Describe occurrence of alkali metals and alkaline earth metals in nature. 4
- 6.(a) Explain Electrochemical Theory about Corrosion. 4
- (b) How Sulphuric acid is prepared on commercial scale by contact process? 4
- 7.(a) What is meant by orbital hybridization? Explain sp^3 Hybridization with an example. 4
- (b) What types of aldehydes give Cannizzaro's reaction? Give its mechanism. 4
- 8.(a) Describe Kolbe's Electrolytic method with mechanism for the preparation of Ethane. 4
- (b) Differentiate between S_N1 and S_N2 reactions. 4
- 9.(a) Explain modern structure of Benzene with atomic orbital treatment. 4
- (b) How C_2H_5OH is prepared from molasses and starch? Write with balance equation. 4

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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) Which one of the following does not belong to alkaline earth metals?
 (A) *Be* (B) *Ra* (C) *Ba* (D) *Rn*
- (2) Which element forms an ion with charge +3?
 (A) *Be* (B) *Al* (C) *C* (D) *Si*
- (3) Oxidation of *NO* in air produces:
 (A) *N₂O* (B) *N₂O₃* (C) *N₂O₄* (D) *N₂O₅*
- (4) Chlorine heptaoxide (*Cl₂O₇*) reacts with water to form:
 (A) Hypochlorous acid (B) Chloric acid (C) Perchloric acid (D) Chlorine and oxygen
- (5) The anhydride of *HClO₄* is:
 (A) *ClO₃* (B) *ClO₂* (C) *Cl₂O₅* (D) *Cl₂O₇*
- (6) Which of the following is a non-typical transition element?
 (A) *Cr* (B) *Mn* (C) *Zn* (D) *Fe*
- (7) Ethers show the phenomenon of:
 (A) Position isomerism (B) Functional group isomerism (C) Metamerism (D) Cis-trans isomerism
- (8) Preparation of vegetable ghee involves:
 (A) Halogenation (B) Hydrogenation (C) Hydroxylation (D) Dehydrogenation
- (9) Which of the following acid can be used as a catalyst in Friedal-Crafts reactions?
 (A) *AlCl₃* (B) *HNO₃* (C) *BeCl₂* (D) *NaCl*
- (10) For which mechanisms, the first step involved is the same?
 (A) *E₁* and *E₂* (B) *E₂* and *S_N2* (C) *S_N1* and *E₂* (D) *E₁* and *S_N1*
- (11) Which compound is more soluble in water?
 (A) *C₂H₅OH* (B) *C₆H₅OH* (C) *CH₃COCH₃* (D) *n*-Hexanol
- (12) Which of the following will have the highest boiling point?
 (A) Methanal (B) Ethanal (C) Propanal (D) 2-Hexanone
- (13) Which of the following reagents will react with both aldehydes and ketones?
 (A) Grignard's reagent (B) Tollen's reagent (C) Fehling's reagent (D) Benedict's reagent
- (14) Which reagent is used to reduce a carboxylic group to an alcohol?
 (A) $\frac{H_2}{Ni}$ (B) $\frac{H_2}{Pt}$ (C) *NaBH₄* (D) *LiAlH₄*
- (15) Alkanenitriles can be prepared by treating alkyl halide with:
 (A) Alcoholic *KOH* (B) Alcoholic *KCN* (C) Aqueous *KOH* (D) Aqueous *KNO₃*
- (16) Most concentrated solid nitrogen fertilizer is:
 (A) *NH₃* (B) *(NH₄)₂HPO₄* (C) *(NH₂)₂CO* (D) *NH₄NO₃*
- (17) Mark the correct statement.
 (A) *Na⁺* is smaller than *Na* atom (B) *Na⁺* is larger than *Na* atom
 (C) *Cl⁻* is smaller than *Cl* atom (D) *Cl⁻* ion and *Cl* atom are equal in size



NOTE: Write same question number and its part number on answer book,
as given in the question paper.

SECTION-I

2. **Attempt any eight parts.** $8 \times 2 = 16$
- The first electron affinity of oxygen is negative but the second is positive. Justify it.
 - Why diamond is bad conductor of electricity but graphite is fairly good conductor of electricity?
 - What is the significance of KO_2 for mountaineers?
 - Why is the aqueous solution of Na_2CO_3 is alkaline in nature?
 - How boric acid can be prepared on commercial scale?
 - Give the names and formulas of different acids of boron.
 - How does Aluminium react with the following (a) Cl_2 (b) H_2
 - H_2SO_4 acts as dehydrating agent. Justify giving two reactions.
 - Complete and balance the following chemical equations:
(a) $KNO_3 + H_2SO_4 \longrightarrow ?$ (b) $NO + Cl_2 \longrightarrow ?$
 - What are macronutrients? Give examples.
 - Give essential qualities of good fertilizers.
 - Write the reactions involved in preparation of urea fertilizer.

3. **Attempt any eight parts.** $8 \times 2 = 16$
- Write down the factors on which oxidizing power of halogens depends.
 - How are HF and HCl prepared?
 - Complete the following reactions:
(a) $HIO_3 \xrightarrow{240^\circ C}$ (b) $HgO + Br_2 \xrightarrow{50^\circ C}$
 - Why transition elements have variable oxidation state?
 - What is anode coating?
 - Write names and formulas of two fused ring hydrocarbons.
 - Convert benzene into (a) Toluene (b) Cyclohexane
 - Convert ethene into ethanal.
 - Distinguish between ethanal and propanone by two chemical tests.
 - Draw formulae for Malonic acid and Phthalic acid.
 - Write names of esters for Banana and Orange flavours.
 - What is glacial acetic acid?

4. **Attempt any six parts.** $6 \times 2 = 12$
- Give the importance of catalytic cracking.
 - What is octane number? How can it be improved?
 - Give the reaction of Methane with nitric acid.
 - Discuss the reactivity of π -bond.
 - Explain the acidic behaviour of acetylene.
 - Prepare n -butane by Wurtz Synthesis.
 - Give the reaction of Alcohol with $SOCl_2$.
 - Prepare phenol by Dow's Method.
 - How iodoform reaction helps to distinguish between Methanol and ethanol?

SECTION-II

- NOTE:** **Attempt any three questions.** $8 \times 3 = 24$
- Give the differences of Hydrogen with group IA, IVA and VIIA elements in the periodic table. 4
 - Describe the process for the preparation of Sodium Hydroxide on commercial scale. 4
 - Give manufacture of Nitric acid with diagram by Birkeland and Eyde's process. 4
 - What is Corrosion? Explain Electrochemical theory of Corrosion. 4
 - Define Atomic Orbital Hybridization. Explain sp^3 Hybridization. 4
 - Write equations for the reactions of acetaldehyde with: 4
 - $NaHSO_3$
 - $NH_2 - OH$
 - $C_2H_5 - OH$
 - $NH_2 - NH - C_6H_5$
 - Write down four methods for the preparation of alkenes. 4
 - What are Nucleophilic substitution reactions? Explain S_N2 mechanism. 4
 - Discuss sulphonation and nitration of Benzene with mechanism. 4
 - Discuss industrial preparation of methanol. 4

CHEMISTRY PAPER-II (NEW SCHEME) GROUP-I

TIME ALLOWED: 20 Minutes

OBJECTIVE

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 bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) Which statement is incorrect?

- (A) All the metals are good conductors of electricity. (B) All the metals are good conductor of heat.
(C) All the metals form positive ions. (D) All the metals form acidic oxides.

(2) Which of the following Sulphates is not soluble in water?

- (A) Sodium Sulphate (B) Potassium Sulphate (C) Zinc Sulphate (D) Barium Sulphate

(3) Chemical composition of Colemanite is:

- (A) $\text{Ca}_2\text{B}_6\text{O}_{11} \cdot 5\text{H}_2\text{O}$ (B) $\text{CaB}_4\text{O}_7 \cdot 4\text{H}_2\text{O}$ (C) $\text{Na}_2\text{B}_4\text{O}_7 \cdot 4\text{H}_2\text{O}$ (D) $\text{CaNaB}_5\text{O}_9 \cdot 8\text{H}_2\text{O}$

(4) Among group VA elements, the most electronegative element is:

- (A) Sb (B) N (C) P (D) As

(5) The strongest acid is:

- (A) HClO (B) HClO_2 (C) HClO_3 (D) HClO_4

(6) Coordination number of Pt in $[\text{PtCl}(\text{NO}_2)(\text{NH}_3)_4]$ is:

- (A) 2 (B) 4 (C) 1 (D) 6

(7) Select from the following the one which is alcohol.

- (A) $\text{CH}_3 - \text{CH}_2 - \text{OH}$ (B) $\text{CH}_3 - \text{O} - \text{CH}_3$ (C) CH_3COOH (D) $\text{CH}_3 - \text{CH}_2 - \text{Br}$

(8) Which one of the following gases is used for artificial ripening of fruits?

- (A) Ethene (B) Ethyne (C) Methane (D) Propane

(9) Aromatic hydrocarbons are the derivatives of:

- (A) Normal series of paraffins (B) Alkene (C) Benzene (D) Cyclohexane

(10) When CO_2 is made to react with ethyl magnesium iodide, followed by acid hydrolysis, the product formed is:

- (A) Propane (B) Propanoic acid (C) Propanal (D) Propanol

(11) According to Lewis concept ethers behave as:

- (A) Acid (B) Base (C) Catalyst (D) Enzyme

(12) Which of the following will have the highest boiling point?

- (A) Methanal (B) Ethanal (C) Propanal (D) 2-Hexanone

(13) Which of the following is used in the manufacture of synthetic fibre?

- (A) Formic acid (B) Oxalic acid (C) Carbonic acid (D) Acetic acid

(14) Which one of the following statements about glucose and sucrose is incorrect?

- (A) Both are soluble in water (B) Both are naturally occurring
(C) Both are Carbohydrates (D) Both are disaccharides

(15) In which of these processes are small organic molecules made into macromolecules?

- (A) The cracking of petroleum fractions (B) The fractional distillation of crude oil
(C) The polymerization of ethene (D) The hydrolysis of proteins

(16) Micronutrients are required in quantity ranging from:

- (A) 4 - 40 g (B) 6 - 200 g (C) 6 - 200 kg (D) 4 - 40 kg

(17) Ecosystem is the smaller unit of:

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

INTERMEDIATE PART-II (12th CLASS)**CHEMISTRY PAPER-II (NEW SCHEME) GROUP-I****TIME ALLOWED: 2.40 Hours****SUBJECTIVE****MAXIMUM MARKS: 68**

NOTE: - Write same question number and its part number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. 8 × 2 = 16
- Why does ionic character of halides decrease from left to right in a period?
 - How does Lanthanide contraction control the atomic sizes of elements of 6th and 7th periods?
 - Why is Potassium Superoxide used in breathing equipments of mountaineers and in space craft?
 - How is boric acid prepared from colemanite?
 - What is effect of heat on boric acid?
 - What is Asbestos? Give its two uses.
 - Give the reactions of nitric acid with: (a) Arsenic (b) Antimony
 - What is aqua regia? How does it dissolve gold?
 - What happens when following compounds are heated with conc. H_2SO_4 ?
(a) $C_6H_{12}O_6$ (b) H_3C_2OH
 - What are macro-nutrients? Give their names.
 - Give four properties of a good fertilizer.
 - State the term "Dissolved Oxygen (D.O.)". What is its use?
3. Attempt any eight parts. 8 × 2 = 16
- Define the term Carbonization. Indicate three fractions obtained by the carbonization of coal.
 - Write structural formulas of the followings:
(i) 3-n-Propyl-1, 4-Pentadiene (ii) Divinyl acetylene
 - Define heat of combustion with example.
 - How will you prepare m-chloronitrobenzene from benzene in two steps?
 - Write two objections that were raised on Kekule's structure for benzene molecule.
 - Write reaction of ethyl magnesium chloride with water.
 - Write an excellent method for the preparation of simple alkyl iodides.
 - Write structural formulas of these compounds: (i) Ethoxy propane (ii) Lactic acid
 - How ethanol is denatured to avoid its use for drinking purpose?
 - Write the structural formulas of these compounds: (i) Phthalic acid (ii) Acetic anhydride
 - What is zwitter ion? How it is formed?
 - What are essential and non-essential amino acids?
4. Attempt any six parts. 6 × 2 = 12
- What are disproportionation reactions? Explain your answer with suitable example.
 - HF is weaker acid than HCl . Why?
 - Arrange these ions in order of increasing size. F^- , I^- , Cl^- , Br^-
 - Why does damaged tin plated iron get rusted quickly?
 - Describe general mechanism of base-catalyzed addition reaction of carboxyl compounds.
 - How will you distinguish between ethanal and propanone?
 - Draw cyclic structure of glucose and fructose.
 - Define acid number. What is rancidity?
 - What is meant by hardening of oil?

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

- What are hydrides? Write down their classification and the properties of the covalent hydrides. 4
- Describe the preparation of $NaOH$ by Nelson's cell. 4
- How will you manufacture wrought iron from cast iron? 4
- What is smog? Explain the pollutants which are main cause of photochemical smog. 4
- Define hybridization and explain the structure of Ethyne on the basis of hybridization. 4
- What are Friedel-Crafts alkylation? Explain by giving two examples with mechanism. 4
- Write down structural formulae for the following compounds: 4
 - Isobutylene
 - But-1-ene-3-Yne
 - 2, 5-Heptadiene
 - Vinyl bromide
- Explain following terms using ethyl alcohol as an example: 2 + 2
 - Esterification
 - Ether formation
 - Oxidation
 - Dehydration
- What are Grignard reagents? How can you prepare a primary, secondary and a tertiary alcohol with the help of Grignard reagent? 4
- Write reaction equation for reaction of ethanal with: 4
 - NH_2OH
 - NH_2-NH_2
 - $H_2N-NHC_6H_5$
 - 2, 4-DNPH

CHEMISTRY PAPER-II (NEW SCHEME) GROUP-II

TIME ALLOWED: 20 Minutes

OBJECTIVE

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 bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) Mark the correct statement: (A) All lanthanides are present in the same group
(B) All halogens are present in the same period (C) All the alkali metals are present in the same group
(D) All the noble gases are present in the same period
- (2) Chile saltpetre has the chemical formula:
(A) NaNO_3 (B) KNO_3 (C) $\text{Na}_2\text{B}_4\text{O}_7$ (D) $\text{Na}_2\text{NO}_3 \cdot \text{H}_2\text{O}$
- (3) Which metal is used in the thermite process because of its activity?
(A) Iron (B) Copper (C) Aluminium (D) Zinc
- (4) Which of the following species has the maximum number of unpaired electrons?
(A) O_2 (B) O_2^+ (C) O_2^- (D) O_2^{2-}
- (5) Which of the following hydrogen halide is the weakest acid in solution?
(A) HF (B) HBr (C) HI (D) HCl
- (6) Which of the following is a non-typical transition element?
(A) Cr (B) Mn (C) Zn (D) Fe
- (7) The state of hybridization of carbon atom in methane is:
(A) sp (B) sp^2 (C) sp^3 (D) dsp^2
- (8) Preparation of vegetable ghee involves:
(A) Halogenation (B) Hydrogenation (C) Hydroxylation (D) Dehydrogenation
- (9) Which of the following can be used as a catalyst in Friedel-Crafts reactions?
(A) AlCl_3 (B) HNO_3 (C) BeCl_2 (D) NaCl
- (10) $\text{S}_\text{N}2$ reactions can be best carried out with:
(A) Primary alkyl halides (B) Secondary alkyl halides (C) Tertiary alkyl halides (D) All of these
- (11) Ethanol can be converted into ethanoic acid by:
(A) Hydrogenation (B) Hydration (C) Oxidation (D) Fermentation
- (12) Which one of the following will have the highest boiling point?
(A) Methanal (B) Ethanal (C) Propanal (D) 2-Hexanone
- (13) Amyl acetate has the flavour of:
(A) Apricot (B) Banana (C) Orange (D) Jasmine
- (14) Which of the following elements is not present in all proteins?
(A) Carbon (B) Hydrogen (C) Nitrogen (D) Sulphur
- (15) Vegetable oils are:
(A) Unsaturated fatty acids (B) Glycerides of unsaturated fatty acids
(C) Glycerides of saturated fatty acids (D) Essential oils obtained from plants
- (16) Which woody raw material is used for the manufacture of paper pulp?
(A) Cotton (B) Bagasse (C) Poplar (D) Rice straw
- (17) A single Chloride free radical can destroy how many Ozone molecules?
(A) 100 (B) 100000 (C) 10000 (D) 1000

INTERMEDIATE PART-II (12th CLASS)**CHEMISTRY PAPER-II (NEW SCHEME) GROUP-II**

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number on answer book,
as given in the question paper.**SECTION-I**

8 × 2 = 16

2. Attempt any eight parts.

- Why ionization energy decreases down the group?
- Why metallic character increases from top to bottom in a group of metals?
- Why 2 % gypsum is added in the cement?
- Why is CO_2 a gas at room temperature while SiO_2 is a solid?
- Name four important Boric acids.
- Write down the formulas of: (i) Kaolin (Pottery clay) (ii) Zircon
- Write down the structural formulas of: (i) Nitrous acid (HNO_2) (ii) Nitric acid (HNO_3)
- Write down two uses of Nitric acid.
- Complete and balance the following equations:
 - $\text{H}_2\text{S} + \text{NO} \longrightarrow$
 - $\text{NO}_2 + \text{H}_2\text{O} \longrightarrow$
- Name eight macronutrients of fertilizers.
- Write down two important raw materials used for the manufacture of cement.
- What is chemical oxygen demand (COD)? How it can be determined?

8 × 2 = 16

3. Attempt any eight parts.

- What are heterocyclic compounds? Give two examples.
- How is 2-Butyne converted into Cis-2-Butene?
- How would you establish that ethylene contains a double bond? Justify your answer with a chemical reaction.
- Give two objections to Kekule's formula of Benzene.
- How is benzene prepared from the given compounds? (a) n-Hexane (b) Sodium benzoate
- Give reactions of ethyl chloride with: (a) Sodium metal (b) Sodium lead alloy
- Give the reactions of a Grignard's Reagent with (a) Ethanol (b) Cyanogen Chloride
- What is denaturing of alcohol?
- State term esterification with an example.
- Give a reaction in which $-\text{COOH}$ group is reduced to $-\text{CH}_3$ group.
- What is Zwitter ion? Give an example.
- How is vinegar prepared from ethanol?

6 × 2 = 12

4. Attempt any six parts.

- Give reaction of bleaching powder with excess of Sulphuric acid. How the activity of bleaching powder is measured.
- Give two uses of Argon.
- Give reactions of XeF_4 with (i) Hg (ii) NH_3
- Under what conditions, does aluminium corrode?
- Give any four uses of Formaldehyde.
- How will you distinguish between methanal and ethanal?
- Define saponification number.
- In what ways fats and oils are different? Give example.
- What are thermoplastic polymers? Give example.

SECTION-II

8 × 3 = 24

NOTE: - Attempt any three questions.

5.(a) Define electron affinity. Explain trends of electron affinity in groups and periods.

4

(b) Complete and balance the given equations: (i) $\text{Mg}(\text{OH})_2 \xrightarrow{\text{Heat}}$

4

(ii) $\text{Li}_2\text{O} + \text{H}_2\text{O} \longrightarrow$ (iii) $\text{Na}_2\text{O}_2 + \text{H}_2\text{O} \longrightarrow$ (iv) $\text{NaNO}_3 \xrightarrow{\text{Heat}}$ 6.(a) Write down the chemical equations for the reaction of $\text{K}_2\text{Cr}_2\text{O}_7$ with:

4

(i) H_2S (ii) FeSO_4 (iii) KI (iv) NaCl

(b) What is smog? Write down the conditions required for its formation.

4

7.(a) Define Hybridization and explain the structure of ethyne on its basis.

4

(b) What are aromatic hydrocarbons? How are they classified?

4

8.(a) How will you convert ethyne to? (i) Ethene (ii) Acetaldehyde (iii) Divinyl acetylene (iv) Glyoxal

4

(b) Write down any two methods for the preparation of phenol.

4

9.(a) How $\text{C}_2\text{H}_5\text{MgBr}$ reacts with (i) CO_2 (ii) HCHO (iii) CH_3COCH_3 (iv) CH_3CHO

4

(b) Explain Aldol condensation with its mechanism.

4

CHEMISTRY PAPER-II (NEW SCHEME) GROUP-I

TIME ALLOWED: 20 Minutes

OBJECTIVE

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 bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) Ether shows the phenomenon of:-
(A) Position isomerism (B) Functional group isomerism (C) Metamerism (D) Cis-trans isomerism
- (2) Vinyl acetylene combines with HCl to form:-
(A) Polyacetylene (B) Benzene (C) Chloroprene (D) Divinyl acetylene
- (3) _____ can be used as a catalyst in Friedel-Craft's reactions.
(A) $AlCl_3$ (B) HNO_3 (C) $BeCl_2$ (D) $NaCl$
- (4) _____ is not a nucleophile.
(A) H_2O (B) H_2S (C) BF_3 (D) NH_3
- (5) According to Lewis concept; ether behaves as:-
(A) Acid (B) Base (C) Acid as well as a base (D) Electrophile
- (6) The Carbon atom of a Carbonyl group is:-
(A) sp hybridized (B) sp^2 hybridized (C) sp^3 hybridized (D) dsp^2 hybridized
- (7) Acetic acid can be manufactured by:-
(A) Distillation (B) Fermentation (C) Ozonolysis (D) Esterification
- (8) 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)
- (9) The reaction between a fat and $NaOH$ is:-
(A) Esterification (B) Hydrogenolysis (C) Fermentation (D) Saponification
- (10) Phosphorus helps in the growth of:-
(A) Root (B) Leave (C) Stem (D) Seed
- (11) _____ is secondary pollutant.
(A) Carbonic acid (B) CO_2 (C) SO_2 (D) CO
- (12) Keeping in view the size of atoms, the correct order is:-
(A) $Mg > Sr$ (B) $Ba > Mg$ (C) $Lu > Ce$ (D) $Cl > I$
- (13) The mineral $CaSO_4 \cdot 2H_2O$ has general name of:-
(A) Gypsum (B) Dolomite (C) Calcite (D) Epsom Salt
- (14) _____ elements is not present abundantly in earth's crust.
(A) Silicon (B) Aluminium (C) Sodium (D) Oxygen
- (15) Oxidation of NO in air produces:-
(A) N_2O (B) N_2O_3 (C) N_2O_4 (D) N_2O_5
- (16) The anhydride of $HClO_4$ is:-
(A) ClO (B) ClO_2 (C) ClO_3 (D) Cl_2O_7
- (17) Co-ordination number of Pt in $[PtCl(NO_2)(NH_3)_4]^{2-}$ is:-
(A) 2 (B) 4 (C) 1 (D) 6

INTERMEDIATE PART-II (12th CLASS)**CHEMISTRY PAPER-II (NEW SCHEME) GROUP-I**

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number on answer book, as given in the question paper.

**SECTION-I****2. Attempt any eight parts.****8 × 2 = 16**

- (i) Define Atomic Radius. Why Atomic Radius of Alkali metals increases in group of Periodic table?
- (ii) What are Halides? Give their types.
- (iii) What is function of *Ca* in plant growth?
- (iv) What is the formula of Red Lead? Give its principle uses.
- (v) What is the effect of heat on the Orthoboric Acid?
- (vi) What is the Chemistry of the Borax-bead Test?
- (vii) Orthophosphoric acid is a weak tribasic acid. Prove it giving reactions with *NaOH*.
- (viii) Complete the following chemical equations:-
 - (a) $H_2S + NO_2 \longrightarrow$
 - (b) $KI + NO_2 \longrightarrow$
- (ix) Concentrated H_2SO_4 act as a dehydrating agent. Give two examples.
- (x) What is meant by Biochemical Oxygen Demand?
- (xi) Define Smog. Give the composition of Photochemical Smog.
- (xii) What is an Oil Refinery? Mention oil refineries in Pakistan.

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

- (i) Name the following complexes according to IUPAC System:-
 - (a) $[Cr(OH)_3(H_2O)_3]$
 - (b) $K_2[Pt(Cl)_6]$
- (ii) Define the term coordination number with an example.
- (iii) How Ethylene is converted into? (a) Ethylene Oxide (b) Ethylene glycol
- (iv) How will you convert 1 - propanol into 1 - chloro - 2 - propanol?
- (v) Write down the structural formulae of following compounds:-
 - (a) Benzophenone
 - (b) Acetophenone
- (vi) Which method is more useful for the preparation of ethyl chloride? Give its chemical reaction.
- (vii) Write down the structural formulae of following compounds:-
 - (a) Glycerol
 - (b) Lactic acid
- (viii) Ethyl alcohol is a liquid while methyl chloride is a gas? Justify.
- (ix) How will you distinguish between Acetaldehyde and Benzaldehyde?
- (x) Discuss the reaction of an aldehyde with Tollen's reagent.
- (xi) What are Zwitter Ions?
- (xii) What is a Peptide Bond? Write down formula of a dipeptide?

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

- (i) What are Thermosetting Polymers? Give an example.
- (ii) Define Saponification number with an example.
- (iii) Write four importances of Lipids.
- (iv) What are Micronutrients?
- (v) Describe the composition of a good Portland cement.
- (vi) How is the wet sheet of paper dried in paper industry?
- (vii) Why is *HF* a weaker acid than *HCl*?
- (viii) Write the reactions of bleaching powder with (a) NH_3 (b) CO_2
- (ix) Give two uses of Argon.

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

- 5.(a) Explain the position of Hydrogen in 1 A and VII A groups and explain its similarities and dissimilarities with those groups. 4
- (b) What is the role of Gypsum in Agriculture and Industry? 4
- 6.(a) Explain the following properties of Transition metals:- 4
 - (i) Paramagnetism (ii) Colour
- (b) Explain the process of incineration of industrial waste. 4
- 7.(a) Define Alicyclic compounds and Aromatic compounds with one example in each case. 4
- (b) Predict the major products of bromination of the following compounds:- 4
 - (i) Toluene (ii) Benzoic acid (iii) Benzaldehyde (iv) Phenol
- 8.(a) How will you bring about the following conversions? 4
 - (i) Methane to Ethane (ii) Acetic acid to Ethane
- (b) How is Methyl alcohol obtained on large scale from water gas? Draw diagram also. 4
- 9.(a) Write reactions of ethyl magnesium bromide with:- 4
 - (i) Water (ii) Ammonia (iii) Alcohol (iv) CO_2
- (b) Explain Cannizzaro's reaction with suitable examples and mechanism. 4

INTERMEDIATE PART-II (12th CLASS)**CHEMISTRY PAPER-II (NEW SCHEME) GROUP-II**

TIME ALLOWED: 20 Minutes

OBJECTIVE

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 bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) _____ element is not present in all proteins.
(A) Sulphur (B) Hydrogen (C) Carbon (D) Nitrogen
- (2) Phosphorus helps the growth of:-
(A) Leave (B) Root (C) Seed (D) Stem
- (3) The main pollutant of leather tanneries in the waste water is due to the salt of:-
(A) Chromium (III) (B) Lead (C) Chromium(VI) (D) Copper
- (4) Peroxyacetyl nitrate(PAN) is an irritant to human beings and it affects:-
(A) Eyes (B) Ears (C) Stomach (D) Nose
- (5) The ionization energy of Calcium is:-
(A) Lower than that of Barium (B) Lower than that of Magnesium
(C) Higher than that of Beryllium (D) Lower than that of Strontium
- (6) _____ does not belong to Alkaline Earth Metal.
(A) Rn (B) Ba (C) Ra (D) Be
- (7) The chief ore of Aluminium is:-
(A) Na_3AlF_6 (B) $Al_2O_3 \cdot H_2O$ (C) $Al_2O_3 \cdot 2H_2O$ (D) Al_2O_3
- (8) The brown gas formed, when metal reduces HNO_3 to:-
(A) N_2O_3 (B) N_2O_5 (C) NO (D) NO_2
- (9) _____ is the strongest acid in water.
(A) $HClO$ (B) $HClO_2$ (C) $HClO_3$ (D) $HClO_4$
- (10) The strength of binding energy of transition elements depends upon:-
(A) Number of neutrons (B) Number of protons
(C) Number of unpaired electrons (D) Number of electron pairs
- (11) Linear shape is associated with which set of hybrid orbitals:-
(A) dsp^2 (B) sp^3 (C) sp^2 (D) sp
- (12) Vinyl acetylene combines with HCl to form:-
(A) Polyacetylene (B) Benzene (C) Chloroprene (D) Divinylacetylene
- (13) _____ compound is the most reactive one.
(A) Ethene (B) Benzene (C) Ethane (D) Ethyne
- (14) _____ is not a nucleophile.
(A) H_2S (B) H_2O (C) BF_3 (D) NH_3
- (15) Ethanol can be converted into Ethanoic Acid by:-
(A) Hydration (B) Hydrogenation (C) Fermentation (D) Oxidation
- (16) _____ have the highest boiling point.
(A) 2-Hexanone (B) Propanal (C) Ethanal (D) Methanal
- (17) _____ reagent is used to reduce a Carboxylic group to an alcohol.
(A) $NaBH_4$ (B) H_2/Pt (C) $LiAlH_4$ (D) H_2/Ni

CHEMISTRY PAPER-II (NEW SCHEME) GROUP-II

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number on answer book,
as given in the question paper.**SECTION-I**

2. Attempt any eight parts.

8 × 2 = 16

- Why are the ionic radius of negative ions larger than the size of their parent atoms?
- Zinc oxide is amphoteric in nature. Explain with reactions.
- How is Gypsum converted into plaster of Paris? Write chemical equation.
- Write the formula of (a) Bauxite (b) Cryolite
- Write the Chemistry of Borax Bead test with an example.
- Why are Silicones preferred to petroleum products as lubricant?
- Write two reactions of NO with (a) $FeSO_4$ (b) H_2S
- Write two reactions of P_2O_5 as dehydrating agent.
- Write two similarities of Oxygen and Sulphur.
- What is the role of Chlorofluorocarbons in destroying ozone? Write reactions.
- How is the quality of water determined by chemical Oxygen demand?
- Define Heterocyclic compounds with two examples.

3. Attempt any eight parts.

8 × 2 = 16

- Give systematic names to following complexes:- (a) $[Fe(CO)_5]$ (b) $[Co(NH_3)_6]Cl_3$
- Give the uses of $KMnO_4$.
- What happens when ter-butyl alcohol is treated with conc. H_2SO_4 ?
- How will you distinguish acetylene and ethene?
- How will you prepare the following compound from Benzene in two steps?
m-chloronitro benzene
- Give the reaction of Ethylene epoxide with ethyl-magnesium bromide.
- Give the four uses of Ethanol.
- How phenol is prepared from Chlorobenzene (Dow's Method)?
- What does happen when Alkaline Sodium nitroprusside solution is added to Ketones?
- How does an Aldehyde react with (a) hydroxylamine (b) Hydrazine
- Write down the four uses of Acetic Acid.
- What are essential and non-essential Amino Acids?

4. Attempt any six parts.

6 × 2 = 12

- Write reactions of H_2SO_4 with $NaCl_{(s)}$ and $NaBr_{(s)}$.
- Justify that Cl_2O_7 is the anhydride of perchloric acid.
- Write important uses of Radon.
- Write note on Polyester resins.
- What is the effect of pH on Enzymes?
- Point out the difference between Glucose and Fructose?
- Write importance of Nitrogen for growth of plant.
- Define Lignin, write its effect on paper.
- Write names of two woody and two non-woody raw materials used for manufacturing of paper.

SECTION-II

NOTE: - Attempt any three questions.

8 × 3 = 24

- What are Hydrides? Give classification of Hydrides with Periodic Trend. 4
- Describe with diagram the manufacture of Sodium by Down's cell. 4
- Give two methods for the preparation of $K_2Cr_2O_7$, also give its two uses. 4
- What is Acid Rain? How does it affect our environment? 4
- Define Hybridization and explain the structure of Ethyne according to Hybridization concept. 4
- What are Friedel-Crafts' reactions? Explain by giving two examples with mechanism. 4
- How will you prepare following from Ethyne (Equations only):- 4
 - Acetaldehyde
 - Benzene
 - Ethane
 - Oxalic acid
- Write two methods for the preparation of Phenol. 4
- What is β -Elimination? Explain briefly the two possible mechanisms of β -Elimination reactions. 4
- What type of Aldehydes give Cannizzaro's reaction? Give its Mechanism. 4