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 ●

311-424-1A-14500 ★★★★

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

312-424-1A-10000 ★★

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

Chemistry | **H.S.S.C (12th) 1st Annual 2023** | Time : 20 Minutes

Paper : II | Group: I | Objective – (i) | Marks : 17

Paper Code	8	4	8	1

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

SECTION-A

Q.1	Questions	A	B	C	D
1.	Which is the correct statement ?	All lanthanides are present in the same group	All halogens are present in the same period	All the alkali metals are present in the same group	All the noble gases are present in the same period
2.	The element cesium bears resemblance with:	Ca	Cr	Cl	None of these
3.	Aluminium oxide is:	Acidic oxide	Basic oxide	Amphoteric oxide	Non-metallic oxide
4.	Laughing gas is chemically:	NO	N_2O	NO_2	N_2O_4
5.	Chlorine heptaoxide (Cl_2O_7) reacts with water to form:	Hypochlorous acid	Chloric acid	Perchloric acid	Chlorine and oxygen
6.	The total number of transition elements is:	10	14	40	68
7.	Ethers show the phenomenon of:	Position isomerism	Cis-traus isomerism	Metamerism	Functional group isomerism
8.	Vinylacetylene combines with HCl to form:	Polyacetylene	Benzene	Chloroprene	Divinylacetylene
9.	The electrophile in aromatic sulphonation is:	H_2SO_4	HSO_4^-	SO_3	SO_3^+
10.	S_N2 reactions can be best carried out with:	Primary alkyl halides	Secondary alkyl halides	Tertiary alkyl halides	Tertiary and primary alkyl halides
11.	Which compound is called universal solvent?	H_2O	CH_3OH	C_2H_5OH	CH_3OCH_3
12.	Which compound will have the maximum repulsion with H_2O?	C_6H_6	C_2H_5OH	$CH_3CH_2CH_2OH$	CH_3OCH_3
13.	Which of the given compound will give iodoform test on treatment with I_2/NaOH?	Formaldehyde	Benzaldehyde	2-butanone	3-pentanone
14.	Which compound is used as coagulant for latex in rubber industry?	Formic acid	Acetic acid	Benzoic acid	Butanoic acid
15.	Which of these polymers is a natural polymer?	DNA	Polyester	PVC	Rayon fibre
16.	Phosphorous helps the growth of:	Root	Stem	Leaves	Seed
17.	The normal amount of overhead ozone in the atmosphere is about:	35 DU	53 DU	350 DU	51 DU

311-423-1A-13000 ★

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

Chemistry **H.S.S.C (12th) 1st Annual 2023** Time : 2:40 Hours

Paper : II | Group: I | Subjective | Marks : 68

Note: Section B is compulsory. Attempt any 3 questions from Section C.

SECTION-B

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

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

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

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

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

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

SECTION-C

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

5. (a) Write down two points of similarities and two points of dissimilarities between hydrogen and alkali metals. 4

(b) Describe any eight points of peculiar behaviour of lithium. 4

6. (a) What are commercial uses of fluorine, chlorine and their compounds? 4

(b) How is Urea manufactured in Pakistan? Explain it. 4

7. (a) Explain reforming of petroleum with the help of suitable example. 4

(b) Detail out two reactions in which benzene behaves as if it is a saturated hydrocarbon and two reactions in which it behaves as unsaturated hydrocarbon. 4

8. (a) What is cyclic polymerization of Alkynes? How will you prepare synthetic rubber from ethyne? 4

(b) Give the reactions of Ethyl Magnesium Bromide with: 4

(i) NH_3 (ii) HCHO (iii) CH_3CHO (iv) CH_3CH_2-OH

9. (a) What is holoform reaction? Give its importance by any three reactions. 4

(b) Give the mechanism of formation of amide. Give its overall reaction also. 2+2

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

Chemistry | **HSSC (12th) 1st Annual 2023** | Time : 20 Minutes

Paper : II | Group-II | Objective – (iii) | Marks : 17

Paper Code | 8 | 4 | 8 | 6

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

SECTION-A

Q.1	Questions	A	B	C	D
1.	Based on thermal properties, plastics are divided into:	Three main classes	Four main classes	Five main classes	Two main classes
2.	Select the one which is neutral amino acid in nature:	Alanine	Histidine	Aspartic acid	Lysine
3.	The oxidation of aldehydes always gives:	Ketones	Carboxylic acids	Esters	Alkanes
4.	Williamson's synthesis is used to prepare:	Alcohols	Aldehydes	Esters	Ethers
5.	Which compound will have the maximum repulsion with H_2O?	C_6H_6	C_2H_5OH	$CH_3CH_2CH_2OH$	CH_3-O-CH_3
6.	Grignard reagent is reactive due to:	The presence of halogen atom	The presence of Mg atom	The polarity of C–Mg bond	None of these
7.	Vinyl acetylene combines with HCl to form:	Polyacetaldehyde	Benzene	Chloroprene	Divinyl acetylene
8.	Which compound is the most reactive one?	Benzene	Ethene	Ethane	Ethyne
9.	A double bond consists of:	Two sigma bonds	One sigma and one Pi bond	One sigma and two Pi bonds	Two Pi bonds
10.	Which of the given is a typical transition metal?	Sc	Y	Ra	Co
11.	Chlorine heptaoxide (Cl_2O_7) reacts with water to form:	Hypochlorous acid	Chloric acid	Perchloric acid	Chlorine and oxygen
12.	Which catalyst is used in contact process?	Fe_2O_3	V_2O_5	SO_3	Ag_2O
13.	Which of the given element is not present abundantly in earth's crust?	Silicon	Aluminium	Sodium	Oxygen
14.	The mineral ($CaSO_4.2H_2O$) has the general name:	Gypsum	Dolomite	Calcite	Epsom salt
15.	Which is the correct statement?	Na^+ ion is smaller than Na atom	Na^+ ion is larger than Na atom	Cl^- ion is smaller than Cl atom	Cl^- ion and Cl atom are equal in size
16.	The normal amount of overhead ozone is about:	250 DU	350 DU	300 DU	400 DU
17.	Select the percentage of nitrogen in urea:	82%	46%	35%	100%

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

Chemistry | **HSSC (12th) 1st Annual 2023** | Time : 2:40 Hours

Paper : II | Group-II | Subjective | Marks : 68

Note: Section **B** is compulsory. Attempt any **3** questions from Section **C**.

SECTION-B

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

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

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

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

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

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

SECTION-C

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

5. (a) What are halides? Give classification of halides with periodic trend. **4**

(b) Describe with diagram the manufacture of sodium metal by Down's cell. **4**

6. (a) Write down any four points of peculiar behaviour of fluorine. Also write any two commercial uses of (i) Fluorine (ii) Chlorine **2+2=4**

(b) Explain various heating zones in the manufacturing of cement. **4**

7. (a) Define orbital hybridization. Explain sp hybridization with the structure of ethyne. **4**

(b) What is nitration of Benzene? Give its mechanism. **4**

8. (a) How will you bring about the following conversions? **4**

i. Methane to ethane ii. Ethane to methane
iii. Acetic acid to ethane iv. Methane to nitromethane

(b) Differentiate between E1 and E2 mechanisms. **4**

9. (a) How acetaldehyde is prepared in laboratory by two different methods? Show along with labelled diagram. **2+2=4**

(b) What are amino acids? Give their two methods of preparation. **1+3=4**

Chemistry
Paper : II

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Inter (Part-II)-A-2021
Objective – (II)

Time : 20 Minutes
Marks : 17

Paper Code	8	4	8	3

Sahiwal Board-2021

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.

Q.1	Questions	A	B	C	D
1.	Which reagent is used to reduce a carboxylic group to an alcohol?	H_2/Ni	H_2/Pt	$NaBH_4$	$LiAlH_4$
2.	Which of the given will have the highest boiling point?	Methanal	Ethanal	Propanal	2-Hexanone
3.	Elimination bimolecular reactions involve:	first order kinetics	second order kinetics	third order kinetics	zero order kinetics
4.	Which compound will have maximum repulsion with H_2O ?	C_6H_6	C_2H_5OH	$CH_3CH_2CH_2OH$	CH_3-O-CH_3
5.	Which of the given compound will react with Tollen's reagent?	$CH_3-\overset{O}{\overset{\|}{C}}-H$	$CH_3-\overset{O}{\overset{\|}{C}}-CH_3$	$CH_3-\overset{O}{\overset{\|}{C}}-OH$	$CH_3-\overset{O}{\overset{\|}{C}}-CH_2-CH_3$
6.	Which compound is the most reactive one?	Benzene	Ethene	Ethane	Ethyne
7.	The presence of a double bond in a compound is the sign of:	saturation	unsaturation	substitution	none
8.	A double bond consists of:	two sigma bonds	one sigma and one pi-bond	one sigma two pi-bonds	two pi-bonds
9.	The strength of binding energy of transition elements depends upon number of:	electron pairs	unpaired electrons	neutrons	protons
10.	Laughing gas is chemically:	NO	N_2O	NO_2	N_2O_4
11.	Which is the strongest acid?	$HClO$	$HClO_2$	$HClO_3$	$HClO_4$
12.	Which of the given element is not present abundantly in earth's crust?	Silicon	Aluminium	Sodium	Oxygen
13.	Chile saltpetre has the chemical formula:	$NaNO_3$	KNO_2	$Na_2B_4O_7$	$Na_2CO_3.H_2O$
14.	The correct statement is:	Na^+ is smaller than Na atom	Na^+ is larger than Na atom	Cl^- is smaller than Cl atom	$Cl^-(ion)$ and $Cl(atom)$ are equal in size
15.	The chemical formula of Fluorospar is:	$Ca_5(PO_4)_3F$	CaF_2	Na_3AlF_6	$KCl.MgCl_2.6H_2O$
16.	Phosphorus helps the growth of:	roots	leaves	stem	seed
17.	Acetic acid is manufactured by:	Distillation	Fermentation	Ozonolysis	Esterification

Note: **Section I is compulsory. Attempt any 3 questions from Section II.**

(SECTION-I)

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

i. What is trend of electron affinity from top to bottom in a group?
ii. Why the ionic radii of negative ions are larger than the size of their parent atom?
iii. Give the advantages of Down's cell for the preparation of sodium metal on commercial scale.
iv. BeO is amphoteric in nature. Justify.
v. What is borax bead test?
vi. Write down any two uses of boric acid.
vii. Give any four uses of Aluminium.
viii. Write down the dissimilarities of oxygen with sulphur (any four).
ix. Why SO_3 dissolves in H_2SO_4, not in water?
x. Why nitrogen is important for plants? Give two name of nitrogeneous fertilizers.
xi. Write the reactions involved in preparation of urea fertilizer.
xii. Write down the reaction which takes place in 24 hours during setting of cement.

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

i. Why HF is weak acid?
ii. Write reactions of chlorine with cold and hot NaOH .
iii. What is meant by available chlorine in bleaching powder? Give reaction.
iv. Define Corrosion.
v. Why compounds of transition elements show colour?
vi. Define Monocyclic and Polycyclic aromatic hydrocarbons.
vii. Define Resonance Energy. Give one example.
viii. Write the reactions of formaldehyde and acetaldehyde with HCN.
ix. Write applications of Iodoform test.
x. How acetic acid is prepared from Grignard's reagent?
xi. Write the reactions of Acetic Acid with NaOH and Na_2CO_3.
xii. Write four uses of Acetic Acid.

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

i. What is catalytic cracking?
ii. What is meant by functional group? Write the name of two oxygen containing functional groups.
iii. Alkanes are less reactive than Alkenes. Justify.
iv. Define Hydroxylation. Give an example.
v. How may Ethene be converted into ethyl alcohol?
vi. Define Alkyl Halide. Which is the best method of preparing alkyl halides?
vii. Write IUPAC names of the following compounds:

(a) $(CH_3CH_2)_3CBr$ (b) $C_2H_5-\underset{}{\overset{CH_3}{\overset{|}{C}}}H-\underset{}{\overset{}{\overset{|}{C}}}H-Br$ with C_2H_5 on the second carbon

viii. How primary, secondary and tertiary alcohols are different from each other in structure?
ix. Why ethanol has higher boiling point than diethyl ether but less than water?

(SECTION-II)

(Each question carries Eight (8) Marks)

5. (a) Justify the position of hydrogen at the top of group I-A by giving any four points of similarities and dissimilarities. 4
(b) How Lithium shows peculiar behaviour among alkali metals? Mention any eight properties. 4

6. (a) How does Conc. HNO_3 react with the following metals? 4
(i) Cu (ii) Hg (iii) Sn (iv) Zn
(b) Explain Electrochemical theory of corrosion. 4

7. (a) Write four various forms of structural isomerism with examples. 4
(b) Explain Aldol Condensation with mechanism using a suitable example. 4

8. (a) Name the following compounds according to IUPAC system: 4

(i) $(CH_3)_2C=CH_2$ (ii) $(CH_3CH_2)_3CH$ (iii) $HC\equiv C-CH=CH-CH_3$ (iv) $HC\equiv C-\underset{}{\overset{CH_3}{\overset{|}{C}}}H-CH=CH_2$

(b) Give four equations with conditions for the preparation of Alkyl halides from Alcohols. 4

9. (a) Write Friedel-Craft Alkylation reaction with mechanism. 4
(b) Starting from phenol prepare the following compounds: 4
(i) Ortho Hydroxybenzyl Alcohol (ii) Para Hydroxybenzyl Alcohol (iii) Bakelite

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Chemistry (New Scheme) **(INTER PART II CLASS 12th)(II)** **Time : 20 Minutes**
Paper : II **Objective** **Marks : 17**
Code : 8483

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 with marker or pen. Cutting or filling two or more circles will result in zero mark in that question.

1. 1. Reaction between Fat and NaOH is called as:

(A) esterification (B) hydrogenolysis (C) fermentation (D) sponification

2. Coagulant used for purification of potable water is :

(A) $NiSO_4$ (B) $BaSO_4$ (C) $CuSO_4$ (D) Alum

3. Which one is not a calcarious material?

(A) lime (B) clay (C) marble (D) marine shell

4. Hydrolysis of Fats occur by enzyme.

(A) Urease (B) maltase (C) Zymase (D) Lipase

5. Acetamide is prepared by :

(A) heating of CH_3COONH_4 (B) heating of CH_3CN

(C) heating of $CH_3COOC_2H_5$ (D) hydrolysis of CH_3CN

6. Which one has the highest boiling point?

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

7 Methyl alcohol is not used as

(A) solvent (B) antifreezing agent (C) substitute of petrol (D) denaturation of alcohol

8. The most reactive compound is :

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

9. Which one is not a nucleophile?

(A) H_2O (B) H_2S (C) BF_3 (D) NH_3

10. Conversion of unsaturated hydro carbons to saturated hydrocarbons in the presence of catalyst is called as:

(A) halogenation (B) hydrogenation (C) hydroxylation (D) dehydrogenation

11. Both CH_3COOH and $HCOOCH_3$ show isomerism

(A) position (B) chain (C) geometric (D) functional group

12. Formula of Haematite is

(A) FeS_2 (B) Fe_2O_3 (C) $FeCO_3$ (D) Fe_3O_4

13. Weakest acidic solution will be of

(A) HF (B) HBr (C) HI (D) HCl

14. Catalyst used in contact process is

(A) NO / NO_2 (B) Fe_2O_3 (C) SO_3 (D) V_2O_5

15. Chief ore of aluminium is

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

16. Compound obtained when Na burns in excess of air

(A) NaO_2 (B) Na_2O_2 (C) Na_2O (D) Na_2O_3

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^- and Cl - atom are equal in size

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:mistry (New Scheme) (INTER PART II – CLASS 12th) Time: 2 . 40 Hours
aper : II Marks : 68

SUBJECTIVE

Note:- Section I is compulsory. Attempt any 3 questions from Section II.

(Section – I)

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

i. Lanthanide contraction controls the size of elements of 6^{th} and 7^{th} periods. Explain the statement.
ii. Give reason for order of hydration energies $Al^{3+} > Mg^{2+} > Na^{+}$
iii. How lime mortar is prepared from lime? Explain chemical equations.
iv. What is chemical garden?
v. How does weathering of potassium feldspar occur? Explain with the help of chemical equation.
vi. Give chemical formula of soapstone and its two uses.
vii. Complete and balance the given chemical equations. (a) $H_2S + NO \rightarrow$ (b) $HNO_3 + HN_3 \rightarrow$
viii. Give two examples to prove NO_2 as a strong oxidizing agent.
ix. How is orthophosphoric acid converted to metaphosphoric acid? Give complete chemical reaction.
x. Name various steps involved in the manufacturing of Portland cement by wet process.
xi. Write four essential qualities of a good fertilizer.
xii. Describe role of chlorofluorocarbons (CFC s) in removing ozone in stratosphere by mean of chemical reactions.

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

i. Why is there no free rotation about a double bond but a free rotation about a single bond?
ii. What is mustard gas? How it is produced?
iii. Write structural formulas of the following compounds:
(i) 3-methyl -1 – pentene - 4 – yne (ii) But-1-en – 3 – yne
iv. Describe X-ray structure of Benzene.
v. What are mono cyclic aromatic hydrocarbons? Give two examples.
vi. What is a Nucleophilic substitution reaction? Give example.
vii. Why $SOCl_2$ is the best reagent to get alkyl halides from alcohols? Explain with reaction.
viii. Define fermentation. Write essential conditions for fermentation.
ix. Write structural formulas of the given compounds:- (i) Tartaric acid (b) Lactic acid
x. What is Ninhydrin test? Give its use.
xi. What are essential and non essential amino acids?
xii. What is a peptide bond? Write formula of a dipeptide.

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

i. Why iodine has metallic luster?
ii. What are Freon's and Teflon's?
iii. The bleaching action of bleaching powder is due to its oxidative character, justify it.
iv. Damaged tin plated iron gets rusted quickly, give reason.
v. Write chemistry of silver mirror test.
vi. Write reaction for the conversion of methanol to ethanol.
vii. Make difference between fat and oil.
viii. Write importance of DNA.
ix. What is iodine number?

Section-II

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

5. (a) Write any two similarities and two differences between hydrogen and halogens. 4
(b) Describe with diagram the manufacture of sodium by Down's cell. 4
6. (a) Give any two methods for the preparation of potassium chromate? 4
(b) Explain the process of incineration of industrial waste. 4
7. (a) What are homocyclic and heterocyclic compounds? Give suitable examples in each case. 4
(b) Discuss how X- Rays studies confirmed hexagonal structure for benzene. Also discuss objections to Kekule's structure. 4
8. (a) Write a note on halogenations of alkanes by explaining all the steps involved. 4
(b) Explain following properties with reference to phenol. (i) Esterification (ii) Sulphonation 4
9. (a) What products are formed when the following compounds are treated with ethylmagnesium bromide, followed by hydrolysis in the presence of acid? 4
(i) CH_3CHO (ii) CO_2 (iii) $(CH_3)_2CO$ (iv) $ClCN$
(b) Explain the mechanism of the reaction of phenylhydrazine with acetone. 4

Chemistry (New Scheme) (INTER PART II CLASS 12th)(III) Time : 20 Minutes
Paper : II Objective Marks : 17
Code : 8485

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 with marker or pen. Cutting or filling two or more circles will result in zero mark in that question.

1. Benzene cannot undergo the reaction of type:
(A) substitution (B) addition (C) oxidation (D) elimination

2. Elimination bimolecular reaction involves:
(A) first order kinetics (B) second order kinetics (C) 3rd order kinetics (D) zero order kinetics

3. Alcohol obtained by the fermentation process never exceeds beyond:
(A) 14 % (B) 10 % (C) 16 % (D) 95 %

4. Ketones are prepared by the oxidation of
(A) primary alcohol (B) secondary alcohol (C) tertiary alcohol (D) formaldehyde

5. Which one of the following binds blood haemoglobin more strongly than oxygen.
(A) CO (B) CO_2 (C) NO_2 (D) SO_2

6. Acetamide is prepared by heating
(A) ammonium acetate (B) methyl cyanide (C) of phthalic acid (D) of ethyl acetate

7. Which one of these polymers is a synthetic polymer?
(A) animal fat (B) starch (C) cellulose (D) polyester

8. Ammonium nitrate fertilizers is not used for which of the following crops.
(A) cotton (B) wheat (C) sugarcane (D) paddy rice

9. Newspaper can be recycled again and again by how many times?
(A) 02 (B) 05 (C) 04 (D) 03

10. Mark the correct statement.
(A) metallic character increases along a period (B) metallic character increases down the group
(C) metallic character decreases down the group (D) metallic character remain the same in down the group.

11. Which element is deposited at the cathode during electrolysis of brine in Nelson cell.
(A) H_2 (B) Na (C) Cl_2 (D) O_2

12. Aluminium oxide is
(A) acidic oxide (B) basic oxide (C) amphoteric oxide (D) neutral oxide

13. Which catalyst is used in the contact process for the manufacture of H_2SO_4 ?
(A) Fe_2O_3 (B) V_2O_5 (C) SO_3 (D) Ag_2O

14. Which one is the strongest acid?
(A) $HClO$ (B) $HClO_2$ (C) $HClO_3$ (D) $HClO_4$

15. Which of the following is typical transition element?
(A) Sc (B) Y (C) Ra (D) CO

16. A double bond consists of
(A) two sigma bond (B) one sigma and one pi bond (C) One sigma and two pi bond (D) two pi bonds

17. β, β - dichloro ethylsulphide is known as
(A) mustard gas (B) laughing gas (C) phosgene gas (D) bio-gas

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Chemistry (New Scheme) (INTER PART II – CLASS 12th) Time: 2 . 40 Hours
Paper : II Marks : 68

SUBJECTIVE

Note:- Section I is compulsory. Attempt any 3 questions from Section II.

(Section – I)

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

i. Why Na_2O is basic while SO_3 is acidic in nature.
ii. Give essential features of period four (4) in modern periodic table.
iii. Li_2CO_3 decompose on heating but Na_2CO_3 is stable towards heat, why?
iv. What is chemical garden?
v. Aluminium sheets are said to be corrosion free at normal conditions. Why?
vi. What is meant by vitreous silica?
vii. How does sulpher occur in nature?
viii. Complete and balance the given equations. (a) $HNO_2 + (NH_2)_2CO \rightarrow ?$ (b) $NO_{2(g)} + P_{(s)} \rightarrow ?$
ix. How does nitrogen differ from other elements of its group? (write four points)
x. What is meant by chemical oxygen demand?
xi. What is leachate?
xii. Why 1- Butene does not show cis-trans isomerism, but 2- Butene show isomerism?

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

i. What is chromyl chloride test? Give its chemical reaction.
ii. What are interstitial compounds?
iii. How will you convert ethene into formaldehyde?
iv. Write reaction mechanism for the preparation of ethane by Kolbe's process.
v. How will you convert benzene into orthochloronitro-benzene?
vi. How will you convert methane into ethanoic acid?
vii. How will you distinguish between an alcohol and a phenol?
viii. How will you prepare ethanaloxime from an aldehyde?
ix. How ethyl iodide is prepared from diethyl ether?
x. Write structural formulae of following compounds. (i) Benzyl alcohol (ii) phenyl hydrazine
xi. How acetic acid is converted into ethanol?
xii. How will you convert acetic acid into methane?

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

i. What are thermosetting polymers?
ii. Define homopolymer with an example.
iii. What are nucleosides and nucleotides?
iv. What are macronutrients?
v. What do you mean by prilling of urea?
vi. Discuss the reactions that take place during first 24 hours by the " setting of cement".
vii. What is available chlorine? How is it produced?
viii. What are Freons and Teflons?
ix. How are halogen acids ionized in water?

Section-II **(3 × 8=24)**

Note:- Attempt any three (3) questions:

5. (a) What are hydrides? Classify them. Write two properties of any two of them. 4
   (b) Write four roles of lime in industries. 4
6. (a) What is Corrosion? Explain Electrochemical Theory of Corrosion. 4
   (b) Write note on (i) Hydrosphere (ii) Biosphere 4
7. (a) Explain the term Cracking. Write its various types. 4
   (b) Write Mechanism for (i) Friedel Crafts Alkylation (ii) Nitration of Benzene 4
8. (a) Explain acidic nature of alkynes giving at least three examples. 4
   (b) Write reaction of phenol with (i) HNO_3/Δ (ii) $H_2SO_4(Conc)$ (iii) Br_2 (iv) CH_3COCl 4
9. (a) Differentiate between SN^1 and SN^2 reactions. Give four points, each for SN^1 and SN^2 reactions. 4
   (b) Write a note on oxidation of aldehydes and ketones. 4