

ChemistryGroup: 1st**HSSC(12th)1st Annual 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

SWL-1-24

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 ₂ H ₆	C ₂ H ₅ Cl	CH ₃ -O-CH ₃	C ₂ H 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 _N 1 reaction, the fast step involves:	Breakage of covalent bond	Formation of carbocation	Transition state	Attack of nucleophile

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

SWL-1-24

SECTION-B

2. Write short answers to any EIGHT parts.

(8 x 2 = 16)

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

3. Write short answers to any EIGHT parts.

(8 x 2 = 16)

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

(PTC)

Write short answers to any SIX parts.

(6 x 2 = 12)

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

SECTION-C

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

(8x3=24)

- What are the improvements made in the Mendeleev's periodic table? 4
 - Describe with diagram, the manufacture of sodium by Down's Cell method. 4
- Why Fluorine shows peculiar behaviour? (Any four reasons) 4
 - Describe briefly the given steps during the preparation of paper: i-Cleaning ii-Screening 4
- What is orbital hybridization? Explain sp^3 hybridization with an example. 4
 - How does ethyl magnesium iodide react with: 4
 - CO_2
 - $CH_3 - CHO$
 - H_2O
 - C_2H_5OH
- How will you prepare alkynes by Kolb's electrolysis? 4
 - How does acetaldehyde react with $NaBH_4$? Give mechanism of reaction. 1+3
- Write down a note on Atomic orbital treatment of benzene. 4
 - 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

ChemistryGroup: 2nd**HSSC(12th)1st Annual 2024**

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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

SWL-2-24

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 _N 2 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 ₂ O ₇
14.	The brown gas is formed, when metal reduces HNO ₃ to:	N ₂ O ₅	N ₂ O ₃	NO ₂	NO
15.	Boric Acid can not be used:	As antiseptic in medicine	For washing eyes	In soda bottles	For enamels and glazes
16.	Which of the given sulphates is not soluble in water?	Sodium sulphate	Potassium sulphate	Zinc sulphate	Barium sulphate
17.	Na forms -----oxide:	Basic	Amphoteric	Acidic	Super

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

SECTION-B

SWL-2-24

2. Write short answers to any EIGHT parts.

(8 x 2 =

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

3. Write short answers to any EIGHT parts.

(8 x 2 =

- Draw structure of two oxyacids of nitrogen.
- Why does the phosphorous show more than one valency although it is not a transition element?
- Who do the noble gases have low melting and boiling points?
- Give two methods to prepare ClO_2 .
- What is catalytic cracking? Give its importance.
- What are Cis. and trans isomers? Give example.
- Why is the boiling point of n-butane higher than that of isobutane?
- Why alkanes are less reactive than alkenes?
- Give two methods to prepare alkanes from alkyl halides.
- What are secondary pollutants? Give example.

(Continued / BTO)

- How are oxides of sulphur produced in environment? Give their harmful effects in human life.
- Define oxidizing and reducing smog.

4. Write short answers to any SIX parts.

(6 x 2 = 1

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

SECTION-C

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

(8x3=24

- (a) Describe the defects in Mendeleev's periodic table. Give two improvements made in it by Mosley. 4
(b) Discuss the trends in chemical properties of alkaline earth metals (any four). 4
- (a) Write down any four differences of F_2 with its group members. 4
(b) Define the term "setting of cement". Write down the reactions involved in first 24 hours and 1-7 days. 4
- (a) What is orbital hybridization? Explain sp^2 -hybridization in ethene. 4
(b) Differentiate between S_N1 and S_N2 reaction mechanisms. 4
- (a) Write down any two methods for the preparation of alkanes. 4
(b) Give mechanism for acid catalysed nucleophilic addition reaction of ethanol and propanone with hydroxylamine. 4
- (a) What is Friedel-crafts acylation? Write down its mechanism for the preparation of acetophenone. 4
(b) Discuss the commercial preparation of methyl alcohol from water gas in detail. 4