

Roll No. of Candidate : ~~XXXXXXXXXX~~

CHEMISTRY

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

Time: 20 Minutes

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

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

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

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

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

(2 x 8 = 16)

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

3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

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

4. Write short answers to any SIX questions.

(2 x 6 = 12)

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

(Turn Over)

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

SECTION - II

Note: Attempt any THREE (3) questions.

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

Roll No. of Candidate : _____

CHEMISTRY

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

Time: 20 Minutes

OBJECTIVE Code: 8488 Gvj-12-2-23 Marks: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

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

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

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

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

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

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

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

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

(Turn Over)

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

SECTION - II

Note: Attempt any THREE (3) questions.

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