

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

SECTION – I

2. Write short answers to any EIGHT questions. (2 × 8 = 16)

- Why CO<sub>2</sub> is gas at room temperature while SiO<sub>2</sub> solid?
- Give any four uses of boric acid.
- Give reaction of H<sub>3</sub>BO<sub>3</sub> with C<sub>2</sub>H<sub>5</sub>OH.
- 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 × 8 = 16)

- Write down the structural formulas of two possible isomers of C<sub>4</sub>H<sub>10</sub>.
- 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 N<sub>2</sub>O<sub>4</sub>?
- 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 × 6 = 12)

- What is co-ordination number? Give its example.
- Fe<sup>3+</sup> 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 C<sub>2</sub>H<sub>5</sub>OC<sub>2</sub>H<sub>5</sub> and HI.

(Turn Over)

- 2 -

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

SECTION - II

Note: Attempt any THREE (3) questions.

- Define oxidation state. Write down its variation trends in modern periodic table. (4)
  - Describe the peculiar behaviour of beryllium. (4)
- What happens when bleaching powder reacts with  
 (i) dil.H<sub>2</sub>SO<sub>4</sub> (ii) Conc.H<sub>2</sub>SO<sub>4</sub>  
 (iii) NH<sub>3</sub> (iv) HCl (4)
  - Write essential qualities of good fertilizer. (4)
- Define cracking of petroleum. Also discuss catalytic and steam cracking. (4)
  - Write down a note on stability of benzene. (4)
- How does ethyne react with  
 (i) Halogen acid (ii) Alkaline KMnO<sub>4</sub>  
 (iii) Ammonical cuprous Chloride (iv) 10% H<sub>2</sub>SO<sub>4</sub> in the presence of HgSO<sub>4</sub> (4)
  - Define nucleophilic substitution reactions? Explain S<sub>N</sub>1 mechanism in detail. (4)
- Write down a note on aldol condensation in detail. (4)
  - Write down a note on peptides and proteins in detail. (4)

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Roll No. of Candidate : \_\_\_\_\_

**CHEMISTRY**

**Intermediate Part-II, Class 12<sup>th</sup> (1<sup>st</sup>A 423- I) Paper: II Group – II**

**Time: 20 Minutes**

**OBJECTIVE, ..... Code: 8482**

**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. Mark the correct statement  
(A)  $\text{Na}^+$  is smaller than Na atom (B)  $\text{Na}^+$  is larger than Na atom  
(C)  $\text{Cl}^-$  is smaller than Cl atom (D)  $\text{Cl}^-$  ion and Cl atom are equal in size
2. Which of the following sulphate is not soluble in water ?  
(A) Sodium Sulphate (B) Potassium Sulphate (C) Zinc Sulphate (D) Barium Sulphate
3. Aluminium oxide is  
(A) acidic (B) basic (C) amphoteric (D) neutral
4. Which catalyst is used in contact process ?  
(A)  $\text{Fe}_2\text{O}_3$  (B)  $\text{V}_2\text{O}_5$  (C) NO (D)  $\text{SO}_3$
5. The anhydride of  $\text{HClO}_4$  is  
(A)  $\text{ClO}_3$  (B)  $\text{ClO}_2$  (C)  $\text{Cl}_2\text{O}_5$  (D)  $\text{Cl}_2\text{O}_7$
6. 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
7. Which set of hybrid orbital has linear shape ?  
(A)  $\text{SP}^3$  (B)  $\text{SP}^2$  (C) SP (D)  $\text{dSP}^2$
8. Vinyl acetylene combines with HCl to form  
(A) polyacetylene (B) benzene (C) chloroprene (D) divinyl acetylene
9. The electrophile in aromatic sulphonation is  
(A)  $\text{H}_2\text{SO}_4$  (B)  $\text{HSO}_4^-$  (C)  $\text{SO}_3$  (D)  $\text{SO}_3^+$
10. Elimination bimolecular reaction is  
(A) zero order reaction (B) first order reaction  
(C) second order reaction (D) third order reaction
11. Which compound is called a universal solvent ?  
(A)  $\text{H}_2\text{O}$  (B)  $\text{C}_2\text{H}_5\text{OH}$  (C)  $\text{CH}_3 - \text{O} - \text{CH}_3$  (D)  $\text{CH}_3\text{OH}$
12. The carbon atom of carbonyl group is  
(A) SP – hybridized (B)  $\text{SP}^2$  – hybridized (C)  $\text{SP}^3$  – hybridized (D)  $\text{dSP}^2$  – hybridized
13. 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
14. Which is neutral amino acid ?  
(A) lysine (B) glycine (C) histidine (D) glutamic acid
15. Phosphorus helps the growth of  
(A) root (B) leave (C) stem (D) seed
16. Which of these polymers is a synthetic polymer ?  
(A) animal fat (B) starch (C) cellulose (D) polyester
17. Ecosystem is a smaller unit of  
(A) biosphere (B) lithosphere (C) hydrosphere (D) atmosphere

**317-(I)- 1<sup>st</sup>A 423-26000**

CHEMISTRY Intermediate Part-II, Class 12<sup>th</sup> ( 1<sup>st</sup>A 423 ) Paper: II Group – II  
Time: 2:40 Hours SUBJECTIVE Marks: 68

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

**SECTION – I**

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

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

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

- Define functional groups. Write down the name of any two nitrogen containing functional groups.
- What is vital force theory? Who rejected it?
- Differentiate between saturated and unsaturated hydrocarbons.
- Why sigma bond is inert?
- How can ethyne be produced from calcium carbide?
- How does aqua regia dissolve gold?
- Why is nitrogen trivalent but phosphorus has variable oxidation state?
- How is  $PCl_3$  produced from  $SOCl_2$ ?
- Which is the best method for preparation of alkyl halides from alcohols?
- What is meant by  $\beta$ -elimination reaction?
- Define the term fertilizers.
- 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)

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

(Turn Over)

- 2 -

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

**SECTION - II**

Note: Attempt any THREE (3) questions.

- How does classification of elements in different blocks help in understanding their chemistry. (4)
  - Describe the commercial preparation of sodium hydroxide by the diaphragm cell. (4)
- How is bleaching powder prepared by Beckmann's method? 1x4 (4)
  - Describe different zones of the rotary kiln of manufacture of cement. 1x4 (4)
- What is octane number? How can it be improved? (4)
  - Describe atomic orbital treatment of benzene. (4)
- Write down a note on halogenation of alkane. 2+2 (4)
  - Explain the following terms by giving suitable examples 1+3 (4)
    - Nucleophile
    - Electrophile
    - Leaving group
    - Substrate
- Explain the mechanism of addition of sodium bisulphite to acetone. (4)
  - Write down the mechanism for reaction of acetic acid and ethanol. (4)

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