

Gujranwala Board-2024

Roll No. of Candidate : _____

CHEMISTRY

Intermediate Part-II, Class 12th (1st A 424- II) Paper: II Group – I

Time: 20 Minutes

OBJECTIVE Code: 8483

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. The main pollutant of leather tanneries in the waste water is due to salt of
 (A) Lead (B) Chromium (VI) ● (C) Copper (D) Chromium (III)
2. One of the following will have the highest boiling point
 (A) methanal (B) ethanal (C) propanal (D) 2 – hexanone ●
3. The normal amount of overhead Ozone is about
 (A) 150 DU (B) 250 DU (C) 350 DU ● (D) 450 DU
4. Ethanol can be converted into ethanoic acid by
 (A) Hydrogenation (B) Hydration (C) Oxidation ● (D) Fermentation
5. Phosphorus helps the growth of
 (A) root (B) leaf (C) stem (D) seed ●
6. When ethanal ($\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{H}$) is made to react with ethyl Magnesium Bromide followed by acid hydrolysis, the product formed is
 (A) 1-propanol (B) 2-propanol (C) 1-butanol (D) 2-butanol ●
7. Which one of the following elements is not present in all proteins?
 (A) Sulphur ● (B) Carbon (C) Hydrogen (D) Nitrogen
8. The anhydride of HClO_4 is
 (A) ClO_3 (B) ClO_2 (C) Cl_2O_5 (D) Cl_2O_7 ●
9. Which reagent is used to reduce a Carboxylic group to an alcohol?
 (A) H_2/Ni (B) H_2/Pt (C) NaBH_4 (D) LiAlH_4 ●
10. In ring test, the colour of $\text{FeSO}_4 \cdot \text{NO}$ is
 (A) Brown ● (B) Red (C) Green (D) Black
11. The conversion of n-hexane into benzene by heating in the presence of Pt is called
 (A) Isomerization (B) Aromatization ● (C) de-alkylation (D) Re-arrangement
12. The chief ore of aluminium is
 (A) Na_3AlF_6 (B) $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$ ● (C) Al_2O_3 (D) $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$
13. β - β' -dichloroethyl sulphide is commonly known as
 (A) Laughing gas (B) Bio-gas (C) Mustard gas ● (D) Phosgene gas
14. One of the following is not an alkali metal
 (A) Francium (B) Caesium (C) Rubidium (D) Radium ●
15. The state of hybridization of Carbon atom in Methane is
 (A) sp^3 ● (B) sp^2 (C) sp (D) dsp^2
16. Select the two elements which are present in third period
 (A) Li, Be (B) Na, Mg ● (C) K, Ca (D) Rb, Sr
17. One of the following is a typical transition metal
 (A) Sc (B) Y (C) Co ● (D) Ra

317-(II)-1stA 424-30000

Please visit for more data at: www.pakcity.org

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. Why the ionic radii of negative ions are larger than the size of their parent atoms? Give example.
- ii. Give two defects in Mendeleev's periodic table.
- iii. Why transition elements have variable oxidation states?
- iv. KMnO_4 acts as oxidizing agent? Justify with two examples.
- v. Write the chemistry of setting of cement in first twenty four hours.
- vi. Alkali metals give ionic hydrides. Give reason.
- vii. Write the formula of (a) Asbestos (b) Halite
- viii. What is the excellent method to prepare Alkyl Iodide?
- ix. What is terpolymer? Give one example.
- x. What are the monosaccharides? Give one example.
- xi. Compare the compound protein with derived protein.
- xii. How Grignard reagent reacts with "HCHO"?



3. Write short answers to any EIGHT questions.

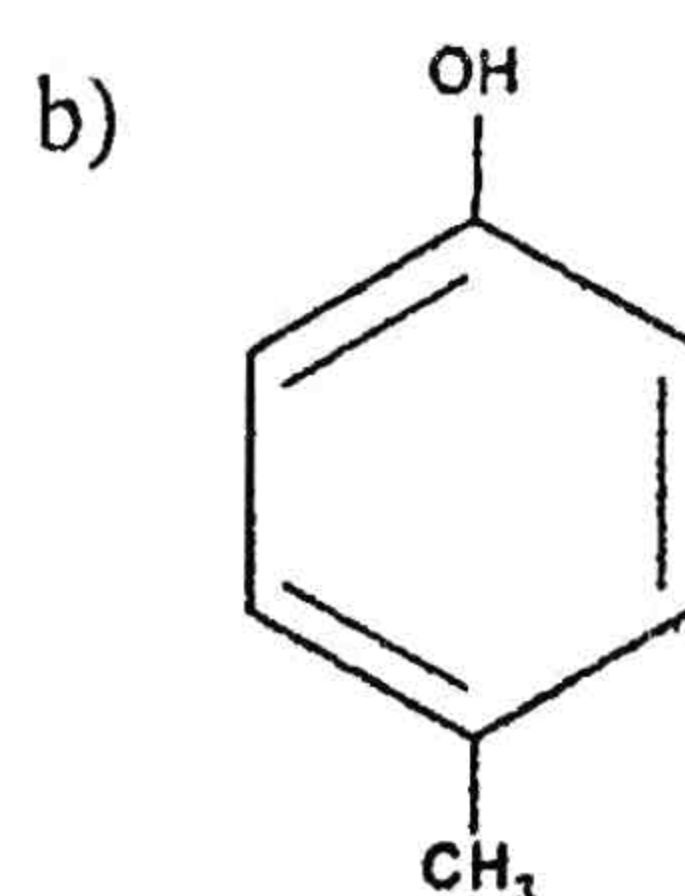
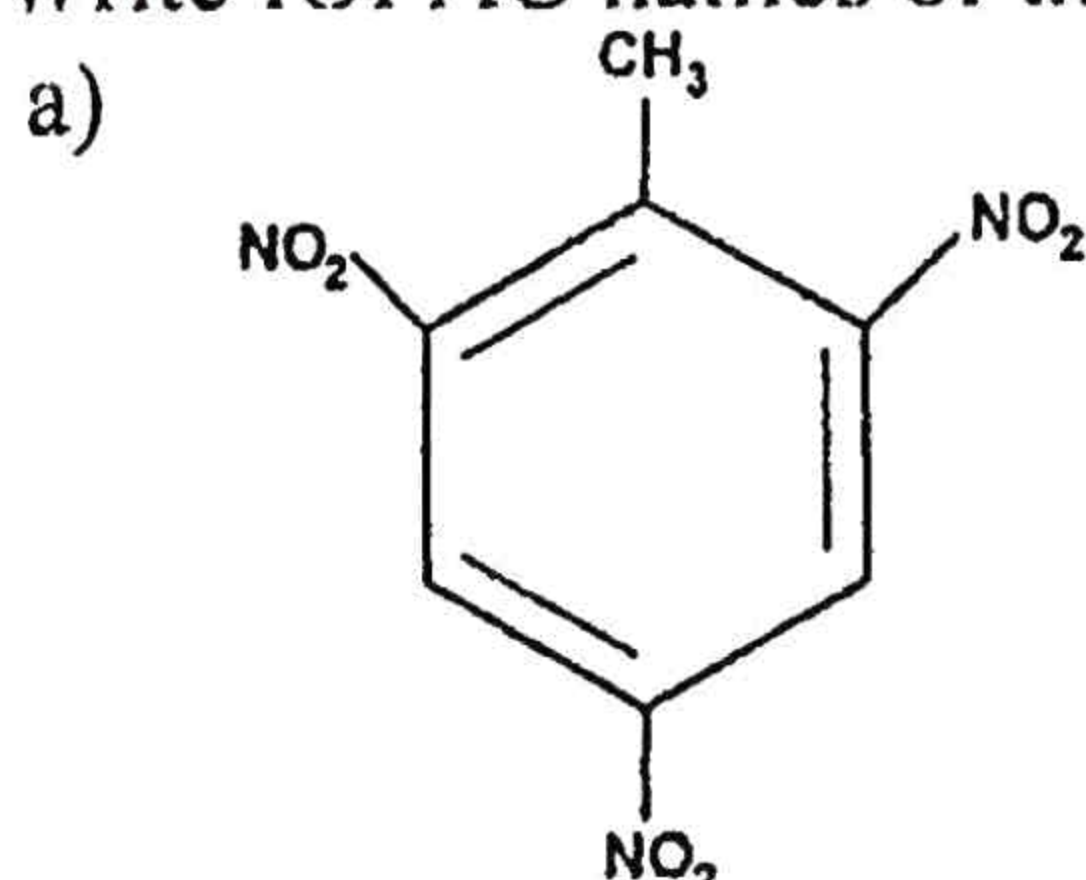
(2 x 8 = 16)

- i. What is aqua regia? How does it dissolve gold?
- ii. NO_2 is oxidizing agent. Prove it with two suitable examples.
- iii. Arrange the oxidizing power of following with reason: F_2 , Cl_2 , Br_2 , I_2
- iv. Why I_2 is solid while F_2 is gas?
- v. Define functional group with any two examples.
- vi. Differentiate between metamerism and position isomerism, with suitable examples.
- vii. How oxalic acid is prepared from acetylene?
- viii. Why ethyne is less reactive than ethene?
- ix. Why alkanes are called as paraffins?
- x. What are leachate?
- xi. Define Biochemical Oxygen demand.
- xii. What is lithosphere?

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- i. How to prepare borax from colemanite?
- ii. Give two important uses of silicates.
- iii. What is white lead? Give its use.
- iv. Write IUPAC names of the following molecules



(Turn Over)

- v. Ethyl alcohol is a liquid while methyl chloride is a gas, justify it.
- vi. Give the reaction of phenol with:
(a) Zn (b) HNO_3
- vii. How acetaldehyde reacts with the following reagents?
(a) HCN (b) I_2/NaOH
- viii. What is vinegar and give its use?
- ix. Write down the mechanism of reaction between acetic acid and methanol.

SECTION – II

5. (a) What is hydration energy? Give one example. Discuss its variation in groups and periods (1+1+2=4) of periodic table.
(b) Write down any eight uses of lime in industry. (4)
6. (a) Give the reactions of Bleaching powder with (4)
i. dil H_2SO_4 ii. HCl
iii. NH_3 iv. CO_2
(b) Describe the process of digestion of paper pulp in Neutral Sulphite chemical process. (4)
7. (a) What are organic compounds? Describe the following terms (give one example for each). (4)
i. Alicyclic Compounds
ii. Aromatic Compounds
iii. Heterocyclic Compounds
(b) Write down the chemical reaction of Ethyl Magnesium Bromide with CO_2 , HCHO , Acetone and Epoxide. (4)
8. (a) Explain acidic nature of alkyne in detail by giving two examples. (4)
(b) What is aldol condensation? Give its mechanism. (4)
9. (a) Discuss catalytic oxidation of Benzene. (4)
(b) How ethers are prepared from following? (4)
i. Williamsons Synthesis ii. Ag_2O

317-1stA 424-30000

Roll No. of Candidate : _____

CHEMISTRY**Intermediate Part-II, Class 12th (1st A 424- IV) Paper: II Group – II****Time: 20 Minutes****OBJECTIVE Code: 8488****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. Which one of the following compounds is most reactive?
(A) Benzene (B) Ethene ● (C) Ethane (D) Ethyne
2. Which one of the following is a non-typical transition element?
(A) Cr (B) Mn (C) Zn ● (D) Fe
3. β - β' -dichloroethyl sulphide is commonly known as
(A) Laughing gas (B) Bio-gas (C) Phosgene gas (D) Mustard gas ●
4. Which three elements are needed for the healthy growth of plants?
(A) N, S, P (B) N, Ca, P (C) N, P, K ● (D) N, K, C
5. The reaction between fat and NaOH is called
(A) Esterification (B) Hydrogenolysis (C) Fermentation (D) Saponification ●
6. Which compound is more soluble in water?
(A) C_2H_5OH ● (B) C_6H_5OH (C) CH_3COCH_3 (D) n-hexanol
7. Which one of the following ions has maximum value of heat of hydration?
(A) Na^+ (B) Cs^{2+} (C) Ba^{2+} (D) Mg^{2+} ●
8. Hydrogen bond is the strongest between the molecules of
(A) HF ● (B) HCl (C) HBr (D) HI
9. Tincal is a mineral of
(A) Al (B) B ● (C) Si (D) C
10. The amount of Ozone in the atmosphere is expressed in units
(A) KJ (B) KJ/mole (C) DU ● (D) N
11. The solution of which acid is used for seasoning of food?
(A) Formic acid (B) Acetic acid ● (C) Benzoic acid (D) Butanoic acid
12. The state of hybridization of Carbon atom in Methane is
(A) sp^3 ● (B) sp^2 (C) sp (D) dsp^2
13. Peroxyacetyl nitrate (PAN) is an irritant to human beings and it affects
(A) Eyes ● (B) Ears (C) Stomach (D) Nose
14. Choose the gas which is obtained by the reaction of Ethyl alcohol with conc. H_2SO_4
(A) CO (B) CO_2 (C) C_2H_2 (D) C_2H_4 ●
15. Select the two normal elements present in sixth period
(A) K, Ca (B) Rb, Sr (C) Cs, Ba ● (D) La, Hf
16. Cannizzaro's reaction is not given by
(A) Formaldehyde (B) Acetaldehyde ●
(C) Benzaldehyde (D) Trimethylacetaldehyde
17. When water (H – OH) is made to react with Ethyl Magnesium Bromide, the product formed is
(A) $CH_2 = CH_2$ (B) $HC \equiv CH$ (C) $CH_3 - CH_3$ ● (D) CH_4

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 diamond is non-conductor and graphite is fairly a good conductor?
- Write the names of families in periodic table.
- Why 'd' and 'f' block elements are called transition elements?
- How KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$ react with H_2S ?
- Write the chemistry of setting of cement in between 1 – 7 days.
- Justify that BeO is amphoteric in nature.
- What will happen when Magnesium reacts with (i) H_2 (ii) N_2
- Starting from primary alkyl halide, prepare ethyl alcohol.
- What is degree of polymerization?
- What are the oligosaccharides? Give one example.
- What do you mean by denaturation of protein?
- How does Grignard reagent react with CO_2 ?



3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- Write down the structures of N_2O_3 and NO_2 .
- Why the elements of group VI A other than Oxygen show more than two oxidation states?
- Write down any four uses of bleaching powder.
- Define disproportionation reaction with an example.
- Define sp hybridization with an example.
- How wood is converted into coal? Give its equation too.
- What is Wolf-Kishner's reduction? Give reaction.
- How is PCl_3 produced from SOCl_2 ?
- How chloroprene is prepared from acetylene? Give reaction, also.
- How aeration is used for purification of H_2O ?
- What is acid rain? How does it affect on aquatic life?
- How smog is produced? Write down its conditions of formation.

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- What is the action of an aqueous solution of borax on litmus?
- Give any two uses of boric acid.
- How and under what conditions does Aluminium react with the following :
(a) Halogens (b) Alkalies
- What is meant by the terms : (a) Nitration (b) Halogenation
- Why Ethanol has higher boiling point than diethyl ether?

(Turn Over)

Gujranwala Board-2024

- 2 -

- vi. How will you distinguish between methanol and ethanol?
- vii. Give the mechanism of addition of HCN to acetone.
- viii. How to prepare acetic acid from ethyne?
- ix. What are zwitter ions?



SECTION – II

- 5. (a) What are hydrides? Explain types of hydrides with their properties. (4)
- (b) What is the role of lime in agriculture and ceramic industries? (4)
- 6. (a) Write down any eight applications of noble gases in daily life. (4)
- (b) What is significance of potassium fertilizers in plant growth? Explain the manufacturing of KNO_3 on industrial scale. (4)
- 7. (a) Explain any four types of structural isomerism by giving one example of each. (4)
- (b) What are alkyl halides? How are the alkyl halides prepared from alcohol by three different reactions? (4)
- 8. (a) Write a note on photochemical halogenation of methane. (4)
- (b) Describe the Reduction reactions of Carbonyl Compounds with following reagents: (4)
 - i. $\text{NaBH}_4/\text{H}_3\text{O}^+$
 - ii. Ni/H_2(Give two reactions for each)
- (a) What is Kekule's Structure of Benzene? How did he support his theory? (1+3=4)
- (b) How will you prepare phenol from the following? (4)
 - i. Chlorobenzene
 - ii. Sodium salt of Benzene Sulphonic Acid

pakcity.org

318-1stA 424-30000

Gujranwala Board-2023

Roll No. of Candidate :

CHEMISTRY

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

Time: 20 Minutes

OBJECTIVE Code: 8481

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

316-(I)-1st A 423-26000

Gujranwala Board-2023

CHEMISTRY

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

Group – I

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)

- 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)

Gujranwala Board-2023

- 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) $\text{dil. H}_2\text{SO}_4$
 - (ii) $\text{Conc. H}_2\text{SO}_4$
 - (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)



316-1stA 423-26000

Gujranwala Board-2023

Roll No. of Candidate : _____

CHEMISTRY

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

Time: 20 Minutes

OBJECTIVE Code: 8488

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) leave (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) $\bar{H}SO_4$ (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

317-(IV)- 1stA 423-26000

Gujranwala Board-2023

CHEMISTRY

Intermediate Part-II , Class 12th (1stA 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 β -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)

Gujranwala Board-2023

- 2 -

- 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? 1x4 (4)
(b) Describe different zones of the rotary kiln of manufacture of cement. 1x4 (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)



317-1stA 423-26000

Gujranwala Board-2022

CHEMISTRY

(Intermediate Part-II, Class 12th) 422

Paper II

(Group – I)

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)

- i. Why oxidation state of noble gases is usually zero?
- ii. Why metallic character increases from top to bottom in group?
- iii. Define alkali and alkaline earth metals.
- iv. Why is the aqueous solution of Na_2CO_3 alkaline in nature?
- v. Write down four uses of silicones.
- vi. Why CO_2 is acidic in character?
- vii. How does nitrogen differ from other elements of its group?
- viii. Give methods of preparation of PCl_3 .
- ix. How chromate ions are converted into dichromate ions?
- x. Define ligand. Give one example.
- xi. Discuss ammonia as a fertilizer.
- xii. Define cement, Write down names of its important raw materials.

3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- i. Why HF is weak acid than that of HI?
- ii. Write down any four uses of bleaching powder.
- iii. Define cis-trans isomerism. Give one example.
- iv. How wood can be converted into anthracite?
- v. How will you convert i) Ethene into ethane ii) Ethyne into ethene
- vi. How does propyne react with the following reagents?
i) $\text{AgNO}_3 / \text{NH}_4\text{OH}$ ii) $\text{Cu}_2\text{Cl}_2 / \text{NH}_4\text{OH}$
- vii. Why alkenes are more reactive than alkanes?
- viii. Write down any two differences between E_1 and E_2 reactions.
- ix. What is Grignard reagent? How it can be prepared?
- x. Define proteins. Give any two importance of proteins.
- xi. Define iodine number and acid number.
- xii. Write down any four importance of lipids.

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- i. Give the mechanism of sulphonation of benzene.
- ii. Give two methods for the preparation of benzene in laboratory.
- iii. How phenol reacts with dil. and conc. HNO_3 ?
- iv. Dehydration of ethyl alcohol occur under different conditions. Give reactions.

(Turn Over)

Gujranwala Board-2022

- 2 -

- v. Give any four uses of formaldehyde.
- vi. How would you convert acetic acid into i) acetyl chloride ii) acetic anhydride
- vii. What are essential and non-essential amino acids?
- viii. What are primary pollutants? Give examples.
- ix. Give any four causes of water pollution.

(SECTION - II)

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

- 5. (a) Define the oxides. Classify the oxides on the basis of their acidic and basic character. (4)
(b) Discuss briefly triplumbic tetraoxide (Pb_3O_4) and lead dioxide (PbO_2). 2+2 (4)
- 6. (a) Write down any eight points regarding the peculiar behaviour of lithium. (4)
(b) Explain the electrochemical theory of corrosion. (4)
- 7. (a) What is orbital hybridization? Explain SP^3 hybridization with example. (4)
(b) Define nucleophilic substitution reaction and discuss the $\text{S}_{\text{N}}1$ reaction in detail. (4)
- 8. (a) Discuss the Kolbe's electrolysis method for the preparation of alkene. (ethene) (4)
(b) Explain the mechanism of cannizzaro's reaction with one example. (4)
- 9. (a) How will you prepare benzene from 1x4 (4)
 - i) cyclohexane ii) n-hexane
 - iii) phenol iv) acetylene
(b) Define alcohols. How different types of alcohols are differentiated by Lucas test. 1+3 (4)



315-422-33000

Gujranwala Board-2022

Roll No. of Candidate : _____

CHEMISTRY

(Intermediate Part-II, Class 12th) 422 - (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. Attempt as many questions as given in objective type question paper and leave others blank.



1. Keeping in view the size of atoms which order is the correct one _____.
 (A) $Mg > Sr$ (B) $Ba > Mg$ (C) $Lu > Ce$ (D) $Cl > I$
2. The oxides of beryllium are _____.
 (A) acidic (B) basic (C) amphoteric (D) none of these
3. Which element is used in the thermite process because of its reactivity?
 (A) iron (B) copper (C) aluminium (D) zinc
4. Laughing gas is chemically _____.
 (A) NO (B) N_2O (C) NO_2 (D) N_2O_4
5. Hydrogen bond is the strongest between the molecules of _____.
 (A) HF (B) HCl (C) HBr (D) HI
6. The total number of transition elements is _____.
 (A) 10 (B) 14 (C) 40 (D) 58
7. The state of hybridization of carbon atom in methane is _____.
 (A) sp^3 (B) sp^2 (C) sp (D) dsp^2
8. Formula of chloroform is _____.
 (A) CH_3Cl (B) CCl_4 (C) CH_2Cl_2 (D) $CHCl_3$
9. During nitration of benzene, the active nitrating agent is _____.
 (A) NO_3 (B) NO_2^+ (C) NO_2^- (D) HNO_3
10. For which mechanism the first step involved is same?
 (A) E_1 and E_2 (B) E_2 and S_N2 (C) S_N1 and E_2 (D) E_1 and S_N1
11. Which compound shows hydrogen bonding?
 (A) C_2H_6 (B) C_2H_5Cl (C) CH_3OCH_3 (D) C_2H_5OH
12. Which of the following will have the highest boiling point?
 (A) methanal (B) ethanal (C) propanal (D) 2-hexanone
13. Acetic acid is manufactured by _____.
 (A) distillation (B) fermentation (C) ozonolysis (D) esterification
14. Which of these polymers is an addition polymer?
 (A) nylon – 6, 6 (B) polystyrene (C) terylene (D) epoxy resin
15. Phosphorus helps the growth of _____.
 (A) root (B) leave (C) stem (D) seed
16. The pH range of the acid rain is _____.
 (A) 7 – 6.5 (B) 6.5 – 6 (C) 6 – 5.6 (D) less than 5
17. Which one heavy metal is highly toxic and does not has safe limit?
 (A) Hg (B) Ca (C) Mg (D) Al

316-(I)-422-33000

Gujranwala Board-2022

CHEMISTRY

(Intermediate Part-II , Class 12th) 422

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)

- Why the second value of electron affinity of an element is usually shown with a positive sign?
- Lanthanide contraction controls the atomic sizes of elements of 6th and 7th periods. Give reason briefly.
- KO₂ is used in breathing equipments for mountaineers and in space crafts, why?
- Aqueous solution of Na₂CO₃ is alkaline in nature. How it can be justified?
- What is the structure of CO₂ and SiO₂ and why they differ from each other?
- How boric acid is prepared on commercial scale from colemanite?
- How moderately dilute and conc. HNO₃ reacts with zinc?
- Why is SO₃ dissolved in H₂SO₄ and not in water?
- What is chromyl chloride test?
- What is sacrificial corrosion?
- How digestion process is carried out in paper industry?
- What reactions take place in the setting of cement from 01 to 07 days?

3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- What is Teflon? Write down its formula and uses.
- Bleaching powder acts as an oxidizing agent. Explain.
- Define metamerism. Give an example.
- What are heterocyclic compounds? Give two examples.
- How methane and ethane can be prepared from sodium acetate?
- Write down any two uses of ethyne.
- State and explain Markownikov's rule with an example.
- What is Grignard's reagent? How it can be prepared?
- Define nucleophile by giving its two examples.
- How is polystyrene prepared? Give its two uses.
- What is meant by denaturation of proteins?
- Write down names of nitrogenous bases present in DNA.

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- How can you prepare m-chloronitrobenzene from benzene?
- Draw the structure of anthracene and phenanthrene.
- What is Dow's method?
- What do you mean by denaturing of alcohol?

(Turn Over)

Gujranwala Board-2022

- 2 -

- v. Write down four uses of formaldehyde.
- vi. What are essential and non-essential amino acids?
- vii. Why the boiling points of carboxylic acids are relatively high?
- viii. How is oil spillage affecting the marine life?
- ix. What is biological oxygen demand (BOD)?

(SECTION - II)

Note: Attempt any THREE (3) questions from Section II

5. (a) Explain periodic trends in the following physical properties: (4)
i) Ionization energy ii) Metallic character
- (b) Discuss the importance of oxides of lead in paints. (4)
6. (a) Write down names and formulas of four minerals of sodium. 1x4 (4)
- (b) Give systematic names to following complexes. 1x4 (4)
- i) $\text{Na}_3[\text{CoF}_6]$ ii) $\text{K}_2[\text{PtCl}_6]$
- iii) $[\text{Cr}(\text{OH})_3(\text{H}_2\text{O})_3]$ iv) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
7. (a) Define hybridization. Explain SP hybridization with the formation of ethyne. (4)
- (b) Compare $\text{S}_\text{N}1$ reactions with $\text{S}_\text{N}2$ reactions by four points. (4)
8. (a) Give the mechanism of the following reactions: 2+2 (4)
- i) Ethene with Br_2 ii) Ethene with ozone
- (b) What are condensation reactions? Explain the mechanism of Aldol condensation. 1+3 (4)
9. (a) Write down four methods of preparation of benzene. (4)
- (b) Write down reactions of phenol in which benzene ring is used. (4)



316-422-33000

Gujranwala Board-2021

Roll No. of Candidate : _____

CHEMISTRY

(INTERMEDIATE PART-II) 421 - (II)

Paper II

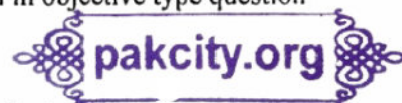
(Group – I)

Time: 20 Minutes

OBJECTIVE Code: 8483

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. Attempt as many questions as given in objective type question paper and leave others blank.



1. 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
2. Which compound shows maximum hydrogen bonding with water?
(A) CH_3OH (B) $\text{C}_2\text{H}_5\text{Cl}$ (C) $\text{CH}_3 - \text{O} - \text{CH}_3$ (D) $\text{C}_6\text{H}_5\text{OH}$
3. SN_2 reactions can be best carried out with
(A) primary alkyl halides (B) secondary alkyl halides
(C) tertiary alkyl halides (D) all of these
4. The solution of which acid is used for seasoning of food?
(A) formic acid (B) acetic acid (C) benzoic acid (D) butanoic acid
5. The oxide of Beryllium is
(A) acidic (B) basic (C) amphoteric (D) none of these
6. Which of the following compounds will not give iodoform test on treatment with I_2 / NaOH ?
(A) acetaldehyde (B) acetone (C) butanone (D) 3-pentanone
7. Which of the following is not a fatty acid?
(A) propanoic acid (B) acetic acid (C) phthalic acid (D) butanoic acid
8. Which is the strongest acid?
(A) HClO (B) HClO_2 (C) HClO_3 (D) HClO_4
9. Which element belongs to group IVA of the periodic table?
(A) barium (B) iodine (C) lead (D) oxygen
10. Micro-nutrients are required in quantity ranging from
(A) 4 – 40 g (B) 6 – 200 g (C) 6 – 200 kg (D) 4 – 40 kg
11. 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) $\text{CH}_3 - \text{CH}_2 - \text{Br}$
12. 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-}
13. Which one of the following has the lowest melting point?
(A) Be (B) Mg (C) Ca (D) Sr
14. Which one of the following compounds will react with Fehling's solution?
(A) $\text{C}_2\text{H}_5\text{COOH}$ (B) CH_3CHO (C) CH_3COOH (D) CH_3COCH_3
15. β - β' - dichloroethyl sulphide is commonly known as
(A) laughing gas (B) mustard gas (C) phosgene gas (D) bio-gas
16. The benzene molecule contains
(A) three double bonds (B) two double bonds
(C) one double bond (D) delocalized π -electron charge
17. The halogen with the lowest melting and boiling points is
(A) fluorine (B) chlorine (C) bromine (D) iodine

318-(II)-421-30000

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)

- Why the size of an anion is larger than its neutral atom?
- What is the role of shielding effect on ionization energy?
- Write down electronic configuration of Na and Ca.
- Why the group I-A elements are called alkali metals?
- Give four uses of borax.
- Write down two points about the peculiar behaviour of carbon from its group.
- What happens when borax is heated with NH_4Cl . Write down balanced equation.
- Write down formulas of the following minerals:
(a) Galena (b) Heavy Spar
- Sulphuric acid is a dehydrating agent. Prove it by giving two equations.
- Briefly describe the role of nitrogen in plants.
- Write down the major steps involved in the synthesis of urea fertilizer.
- What are the raw materials used in the manufacture of cement?

3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- Prepare Cl_2O_7 with the help of chemical reaction.
- Prepare HClO_4 . Also write down its two properties.
- Write down any four uses of bleaching powder.
- Write down the name of any four methods for prevention of corrosion.
- How Zinc coating or anode coating prevents the iron from corrosion?
- Describe the x-rays structure of benzene.
- Prepare benzene and toluene from alkane with equation.
- Write down the reaction of acetone with 2, 4 - dinitrophenylhydrazine.
- Write down any four uses of acetaldehyde.
- How acetic acid is prepared from acetylene?
- Write down the chemical reaction of CH_3COOH with (i) $\text{C}_2\text{H}_5\text{OH}$ (ii) NH_3
- How would you convert acetic acid into acetic anhydride?

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- Define geometric isomerism giving one example.
- What are aliphatic compounds? Give their two examples.
- What is clemmensen reduction? Give example.
- Convert (a) Methane into ethane (b) Ethene into ethylene glycol.
- State Markownikov's Rule with an example.
- Define nucleophile and substrate. Giving one example in each case.
- Convert ethyl chloride into (a) Ethane (b) Tetraethyl Lead
- What is denaturing of alcohol?
- How will you distinguish between ethanol and methanol by a chemical test?

(SECTION - II)

- (a) Define electron affinity. How does it vary in groups and periods generally in the periodic table. 4
(b) Give the formula of Sylvite, Borax, Trona, Natron, Dolomite, Alunite, Asbestos and Barite. 4
- (a) Discuss the preparation of nitric acid by Birkeland and Eyde's process. 4
(b) Discuss the binding energies and oxidation states of transition elements. 4
- (a) Write down note on reforming of gasoline. 4
(b) Explain oxidation of aldehydes and ketones with two examples in each case. 4
- (a) How alkanes can be prepared by Kolbe's electrolytic method. Write down its mechanism. 4
(b) What is β -Elimination reaction? Differentiate between E_1 and E_2 elimination reactions. 4
- (a) Describe Kekule's structure of benzene. 4
(b) How does ethanol react with
i) Na ii) PCl_5 iii) CH_3MgI iv) SOCl_2 4

318-421-30000

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)

- Explain the variation in melting points along the short periods.
- Why the ionic radii of negative ions are larger than the size of their parent atoms?
- Why the elements of group IIA are called alkaline earth metals?
- Write down major problems faced during the preparation of sodium hydroxide by the diaphragm cell.
- Write down the four uses of borax.
- Give the chemistry of borax bead test.
- How will you convert boric acid into borax and vice versa?
- Describe “ring test” for the confirmation of nitrate ions in solution.
- What is “aqua regia”? How does it dissolve gold?
- What are essential nutrient elements? Why these are needed for plant growth?
- Write down the important raw materials used for the manufacture of cement.
- What do you mean by prilling of urea?

**3. Write short answers to any EIGHT questions.**

(2 x 8 = 16)

- Convert acetic acid into ethane by reduction method.
- Give the mechanism for ester formation.
- How acetic acid is prepared from Grignard's Reagent? Give reaction.
- How will you distinguish between ethanal and propanal?
- Convert methanol into ethanal?
- Convert ethyl benzene into benzoic acid.
- What is wurtz-fitting reaction? How it helps to prepare ethyl benzene?
- Why does damaged tin plated iron get rusted quickly?
- Mention any four properties of transition elements.
- Give uses of bleaching powder.
- What are oxyacids of chlorine? Give their names and formulas.
- How does chlorine react with $\text{NaOH}_{(aq)}$ at different temperatures?

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- Define functional group? Give examples of oxygen containing functional groups.
- How quality of fuel can be improved?
- What is ozonolysis? Write down chemical equation.
- How does propyne react with the following reagents:
(a) $\text{AgNO}_3 / \text{NH}_4\text{OH}$ (b) $\text{Cu}_4\text{Cl}_2 / \text{NH}_4\text{OH}$
- What is β -Elimination reaction?
- What is nucleophile? Give two examples of nucleophiles.
- How methanol and ethanol can be distinguished?
- Write down two reactions of alcohol in which O – H bond is broken.
- What is mustard gas? How it can be prepared?

(SECTION – II)

- (a) Write down note on ionization energy. Give its variation within groups and periods. 4
(b) Explain peculiar behaviour of beryllium among its group members. 4
- (a) Write down four similarities and four differences between oxygen and sulphur. 4
(b) Discuss the following properties of transition metals: 4
(i) Para magnetism (ii) Oxidation State
- (a) Define hybridization. Explain SP^2 hybridization with one example. 4
(b) Write down any eight uses of formaldehyde. 4
- (a) How will you convert ethyne into 4
(i) Acetaldehyde (ii) Divinyl Acetylene (iii) Chloroprene (iv) Glyoxal
(b) What is cannizzaro's reaction? Give an example and mechanism. 4
- (a) Predict the major products of bromination of the following: 4
(a) Toluene (b) Nitrobenzene (c) Benzaldehyde (d) Benzoic acid
(b) How methanol is prepared on industrial scale? Why is it also called wood spirit? 4

Roll No. of Candidate: _____

Chemistry (New Scheme)

(INTER PART-II) 419-(III)

Group: I

Paper: II

Time: 20 Minutes

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. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave other blank.

- Formula of chloroform is:
A) CCl_4 B) CHCl_3 C) CH_2Cl_2 D) CH_3Cl
- The chemist who synthesized urea from ammonium cyanate was:
A) Berzelius B) Kolbe C) Wohler D) Lavoisier
- Which of these polymers is a synthetic polymer?
A) animal fat B) starch C) cellulose D) polyester
- Co-ordination number of Pt in $[\text{Pt}(\text{Cl})(\text{NO}_2)(\text{NH}_3)_4]^{2+}$ is
A) 1 B) 2 C) 4 D) 6
- All of following are included in calcareous materials except:
A) lime B) clay C) marble D) marine shell
- The solution of which acid is used for seasoning of food?
A) formic acid B) acetic acid C) benzoic acid D) butanoic acid
- Oxidation of NO in air produces
A) N_2O B) N_2O_2 C) N_2O_4 D) N_2O_5
- Rectified spirit contains about how many percent of alcohol?
A) 80 % B) 85 % C) 90 % D) 95 %
- The reaction between fat and NaOH is called:
A) esterification B) hydrolysis C) fermentation D) saponification
- Which of following element is not abundantly present in earth's crust?
A) silicon B) aluminum C) sodium D) oxygen
- Non-metals are present in which block of periodic table?
A) s-block B) p-block C) d-block D) f-block
- Which halogen occurs naturally in a positive oxidation state?
A) fluorine B) Chlorine C) bromine D) iodine
- For which mechanisms, the first step involved is the same?
A) E_1 and E_2 B) E_2 and SN_2 C) SN_1 and E_2 D) E_1 and SN_1
- Which of the following will have the highest boiling point?
A) methanal B) ethanal C) propanal D) 2-hexanone
- Aromatic hydrocarbons are the derivatives of:
A) alkanes B) alkenes C) benzene D) cyclohexane
- The pH range of the acid rain is:
A) 7 – 6.5 B) 6.5 – 6 C) 6 – 5.6 D) less than 5
- Which hydroxide gets decomposed on heating?
A) LiOH B) NaOH C) KOH D) RbOH

(SECTION - I)

2. Write short answers to any EIGHT questions.

(2 × 8 = 16)

- Why the values of the ionization energy decreases down the group?
- Why ZnO is regarded as amphoteric oxide?
- Why lime water turns milky with CO₂ but becomes clear with excess of CO₂?
- How boric acid is prepared on commercial scale from Colemanite?
- Why Aluminium sheets are said to be corrosion free?
- Why CO₂ is a gas at room temperature while SiO₂ is a solid?
- How an aqua regia dissolves gold?
- How orthophosphoric acid is converted into pyro and metaphosphoric acid?
- How hot concentrated H₂SO₄ reacts with Cu and Ag metals?
- Name four macronutrients and also mention per acre range of their requirement.
- Name any four parts of paper making machine.
- What is "Chemical Oxygen Demand (COD)"? How is it measured?

3. Write short answers to any EIGHT questions.

(2 × 8 = 16)

- What is "Catalytic Cracking"?
- Compounds containing double bonds are more reactive, give reason.
- Write mechanism for the addition of halogen in alkene.
- Prepare benzene from acetylene and n-hexane.
- Draw structural formulas of p-nitrotoluene and p-Dibenzylbenzene.
- Starting from suitable Grignard reagent prepare ethane and ethyl cyanide.
- Write reaction to prepare tetra ethyl lead and Nitro ethane.
- Prepare ethanol from starch.
- Convert ethanol to Iodoform.
- Write strecker synthesis to prepare amino acid.
- What is glacial acetic acid.
- Write structural formula of Lysine and Valine.

4. Write short answers to any SIX questions.

(2 × 6 = 12)

- What is an "Iodized Salt"?
- Why iodine has metallic luster? Justify.
- Name any two methods to manufacture bleaching powder. Also give reaction for this.
- Name different forms of Iron and mention which is the purest form?
- Describe Tollen's test for the identification of aldehydes.
- Write any four uses of formaldehyde.
- Define saponification number with a suitable example.
- Write two points of difference between a fat and oil.
- Differentiate with at least two points between "Amylose" and "Amylopectin".

(SECTION - II)

- Explain "Hydration Energy" as periodic property. 4
 - Point out the eight differences between Li and its group members. 4
- What is meant by "Corrosion"? Explain electrochemical theory of corrosion. 4
 - What is "Acid Rain"? Give detailed effects of acid rain on environment. 4
- Write down any four important features of organic compounds. 4
 - Draw structural formulas of following compounds: 4
 - m-chlorobenzoic acid
 - 2, 4, 6 trinitrotoluene
 - p-hydroxybenzoic acid
 - m-nitrophenol
- How is ethyne converted into following compounds? 4
 - Acetaldehyde
 - Chloroprene
 - Acrylonitrile
 - Methyl nitrile
 - Name the following compounds according to I.U.P.A.C system: 4
 - H₃C - C₂H - C₂H - O - C₃H
 - H₃C - O - C₆H₅
 - H₅C₂ - CH - OH
 - (H₃C)₃ COH
- Discuss "Aldol Condensation" with mechanism. 4
 - Using ethyl bromide as a starting material, how will you prepare the following compounds: 4
 - n-Butane
 - ethyl alcohol
 - propanoic acid
 - ethene

Jl No. of Candidate: _____

Chemistry (New Scheme)
Time: 20 Minutes
(INTER PART-II) 419-(III)
OBJECTIVE
Code: 8486
Group: II
Paper: II
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. Attempt as many questions as given in objective type question paper and leave other blank.

1. A polymeric substance that is formed in the liquid state and then hardened to a rigid solid is called a
 - A) fibre
 - B) varnish
 - C) plastic
 - D) polyamide resin
2. Which set of hybrid orbitals has planar triangular shape?
 - A) sp
 - B) sp^2
 - C) sp^3
 - D) dsp^3
3. The electrophile used in aromatic sulphonation is:
 - A) H_2SO_4
 - B) HSO_4^{-1}
 - C) SO_3
 - D) SO_3^{+}
4. Which one of the following enzymes brings about the hydrolysis of fats?
 - A) urease
 - B) lipase
 - C) maltase
 - D) zymase
5. Vinyl acetylene combines with HCl to form:
 - A) polyacetylene
 - B) benzene
 - C) chloroprene
 - D) divinyl acetylene
6. Formula of Epsom salt is:
 - A) $MgSO_4 \cdot 7H_2O$
 - B) $MgSO_4$
 - C) $MgCO_3$
 - D) $CaMg_3(SiO_3)_4$
7. Which of the following reagent will react with both aldehydes and Ketones
 - A) Tollen's reagent
 - B) Fehling reagent
 - C) Barford reagent
 - D) Grignard reagent
8. Which metal is used in the thermite process because of its activity:
 - A) iron
 - B) copper
 - C) aluminium
 - D) zinc
9. Keeping in view the size of atom, which order is correct one
 - A) $Mg > Sr$
 - B) $Ba > Mg$
 - C) $Lu > Ce$
 - D) $Cl > I$
10. Ecosystem is smaller unit of:
 - A) atmosphere
 - B) biosphere
 - C) lithosphere
 - D) hydrosphere
11. Group VI B of transition elements contains:
 - A) Zn, Cd, Hg
 - B) Fe, Ru, Os
 - C) Cr, Mo, W
 - D) Mn, Te, Re
12. Ammonium Nitrate Fertilizer is not used for which crop?
 - A) cotton
 - B) wheat
 - C) sugar cane
 - D) paddy rice
13. Which compound is more soluble in water?
 - A) C_2H_5OH
 - B) C_6H_5OH
 - C) CH_3COCH_3
 - D) n-Hexanol
14. Which halogen will react spontaneously with $Au(s)$ to produce Au^{3+} ?
 - A) I_2
 - B) Br_2
 - C) Cl_2
 - D) F_2
15. The brown gas formed, when metal reduce HNO_3 to:
 - A) N_2O_5
 - B) N_2O_3
 - C) NO_2
 - D) N_2O_4
16. When CO_2 is made to react with ethyl magnesium Iodide, followed by acid hydrolysis, the product formed is:
 - A) propanoic acid
 - B) ethanoic acid
 - C) propane
 - D) propanal
17. Which reagent is used to reduce carboxylic group to an alcohol:
 - A) H_2/Ni
 - B) H_2/Pt
 - C) $NaBH_4$
 - D) $LiAlH_4$

(SECTION - I)

2. Write short answers to any EIGHT questions.

(2 × 8 = 16)

- Define "Covalent Hydride" with one example.
- Oxides of non-metals show acidic behavior, give reason.
- Why 2% of gypsum is added in cement?
- Aluminium is not found in free state, give reason.
- CO_2 is gas at room temperature while SiO_2 is a solid, give reason.
- What is "Borax"?
- Write two reactions in which H_2SO_4 acts as oxidizing agent.
- Write two differences between Oxygen and Sulphur.
- Write two methods for the preparation of NO_2 .
- What are phosphatic fertilizers?
- What do you mean by "Setting of Cement"?
- What is role of chlorofluoro carbons in "Destruction of Ozone"?



3. Write short answers to any EIGHT questions.

(2 × 8 = 16)

- Define the term "Tautomerism" with an example.
- Give name and reaction of alkenes which is used to indicate the position of double bond.
- How is ethyne converted into:
 - Ethanal
 - Benzene
- How is benzene converted into m-chloronitro-benzene?
- How will you convert phenol into benzene?
- How is ethene converted into 1-butanol?
- Give the reaction which is more useful for the preparation of alkyl chlorides.
- Give the structural formulae of following compounds:
 - Glycerol
 - Lactic acid
- How is ethyl iodide prepared from diethyl ether?
- What is "Peptide Linkage"?
- How is amino acid prepared by strecker synthesis?
- How is ethanol converted into ethanoic acid?

4. Write short answers to any SIX questions.

(2 × 6 = 12)

- Why HIF is weaker acid than HCl ?
- Justify that Cl_2O_7 is the anhydride of per-chloric acid.
- Complete & balance the following equations:
 - $\text{XeF}_4 + \text{NH}_3 \Rightarrow$
 - $\text{XeF}_6 + \text{SiO}_2 \Rightarrow$
- Define "Paramagnetism & Diamagnetism".
- Distinguish chemically between "Acetone" and "Ethyl alcohol".
- Convert methanol to ethanol.
- Cellulose is not digested by human intestinal track justify.
- Point out difference between "Cellulose" and "Starch".
- How radiations affect the activity of enzyme?

(SECTION - II)

- State Mendeleev's periodic law and write down the improvements made in the Mendeleev's table. 4
 - Write down eight points in which lithium differs from other elements of group IA. 4
- Explain the following with two examples each: 2+2
 - Ligand
 - Co-ordination number
 - What is smog? Explain the pollutants which are main cause of photochemical smog. 1+3
- What is chain isomerism? Draw all the possible skeletal formulae of hexane. 1+3
 - Write two reactions for each to justify benzene as saturated and as unsaturated compound. 2+2
- Write Kolbe's method of preparation of ethyne along with its mechanism. 4
 - How does ethanol react with: 4
 - PCl_3
 - SOCl_2
 - Na
 - CH_3COOH
- How $\text{C}_2\text{H}_5\text{MgBr}$ reacts with the following: 4
 - H_2O
 - CO_2
 - HCHO
 - CH_3COCH_3
 - Write one laboratory and one industrial method for preparation of acetaldehyde. 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 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. Attempt as many questions as given in objective type question paper and leave others blank.



1. Zinc oxide is an example of:
(A) acidic oxide (B) basic oxide (C) amphoteric oxide (D) neutral
2. Down's cell is used to prepare.
(A) sodium hydroxide (B) sodium metal (C) sodium carbonate (D) sodium bicarbonate
3. Bauxite is a mineral of
(A) B (B) Be (C) Mg (D) Al
4. Oxidation of NO in air produces.
(A) N_2O_3 (B) N_2O_5 (C) N_2O_4 (D) N_2O
5. Which one of the following acids has the strongest hydrogen bonding?
(A) HF (B) HCl (C) HBr (D) HI
6. Group VIB of transition elements contains
(A) Zn, Cd, Hg (B) Fe, Ru, Os (C) Cr, Mo, W (D) Mn, Tc, Re
7. The state of hybridization of carbon atom in methane is
(A) SP (B) SP^2 (C) SP^3 (D) dSP^2
8. Synthetic rubber is made by polymerization of
(A) chloroform (B) acetylene (C) divinylacetylene (D) chloroprene
9. The carbon-carbon (C-C) bond length in benzene is
(A) 1.34 \AA (B) 1.20 \AA (C) 1.39 \AA (D) 1.54 \AA
10. Which one of the following species is an electrophile?
(A) BF_3 (B) H_2O (C) H_2S (D) NH_3
11. Which one of the following enzymes is not used in fermentation of starch?
(A) diastase (B) urease (C) zymase (D) maltase
12. Cannizzaro's reaction is given by
(A) acetaldehyde (B) propanol (C) propanone (D) benzaldehyde
13. Which one of the following acids is used in the manufacture of synthetic fibre?
(A) acetic acid (B) carbonic acid (C) oxalic acid (D) formic acid
14. Which one of the following polymers is a synthetic polymer?
(A) animal fat (B) starch (C) polyester (D) cellulose
15. Which one of the following set of three elements is needed for the healthy growth of plants?
(A) N, P, K (B) N, S, P (C) N, Ca, P (D) N, K, C
16. The pH range of the acid rain is
(A) 7 – 6.5 (B) 6.5 – 6.0 (C) 6.0 – 5.6 (D) less than 5.0
17. The temperature in the non-rotating chamber in the incineration of industrial and hazardous waste process has a range.
(A) 500°C to 900°C (B) 950°C to 1300°C (C) 250°C to 500°C (D) 150°C to 250°C