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(Inter Part – II) (Session 2020-22 to 2022-24) Sig. of Student ----------

Chemistry (Objective) Group – I Paper (II)

Time Allowed:- 20 minutes PAPER CODE 4481 Maximum 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

1) Classification of elements in the modern periodic table is based on
(A) Law of Triads (B) Law of octaves (C) Moseley law ● (D) Mendeleev's periodic law

2) Chile saltpetre has the chemical formula
(A) $NaNO_3$ ● (B) KNO_3 (C) $CaCO_3$ (D) Na_2CO_3

3) Aluminium oxide is
(A) Acidic Oxide (B) Basic Oxide (C) Amphoteric Oxide ● (D) Non of these

4) Aqua Regia can dissolve noble metals due to the formation of
(A) Nitrosyl chloride ● (B) Nascent Nitrogen (C) Nitric oxide (D) Nitrous Acid

5) Which halogen occurs naturally in a positive oxidation state
(A) Flourine (B) Chlorine (C) Bromine (D) Iodine ●

6) Group VI B of Transition elements contain
(A) Zn, Cd, Hg (B) Fe, Ru, Os (C) Cr, Mo, W ● (D) Mn, Te, Re

7) Select from the following the one which is alcohol
(A) $CH_3 - CH_2 - OH$ ● (B) $CH_3 - O - CH_3$ (C) $CH_3 - COOH$ (D) $CH_3 - CH_2 - Br$

8) Preparation of vegetable ghee involves
(A) Halogenation (B) Hydrogenation ● (C) Hydroxylation (D) Dehydrogenation

9) Which compound is the most reactive one
(A) Benzene (B) Ethene ● (C) [illegible] (D) Ethyne

10) Nucleophile is usually
(A) Basic in character (B) Acidic in character (C) Basic and positively charged (D) Basic and Negatively charged ●

11) Which of the following compound is called Universal Solvant?
(A) H_2O ● (B) CH_3OH (C) C_2H_5OH (D) $CH_3 - O - CH_3$

12) Acetone react with HCN to form cyanohydrin. It is an example of
(A) Electrophillic addition (B) Electrophillic substitution (C) Nucleophillic addition ● (D) Nucleophillic substitution

13) Which acid is used in manufacture of synthetic fiber
(A) Formic Acid (B) Acetic Acid ● (C) Oxalic Acid (D) Carbonic Acid

14) Which one of the following element is not present in all proteins.
(A) Carbon (B) Hydrogen (C) Nitrogen (D) Sulpher ●

15) Micronutrient element are required in Quantity
(A) 4 – 40 gm (B) 6 – 200 gm ● (C) 6 – 200 kg (D) 4 – 40 kg

16) The pH range of acid rain is
(A) 7 – 6.5 (B) 6.5 – 6 (C) 6 – 5.6 (D) less than 5 ●

17) Which one of the following substance cause acid rain?
(A) SO_2 ● (B) Hydro carbons (C) Chloroflourocarbons (D) O_3

1231 -- 1224 -- 14000 (1)

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1224 (Inter Part - II) (Session 2020-22 to 2022-24)

Chemistry (Subjective) (Group I) Paper (II)

Time Allowed: 2.40 hours Maximum Marks: 68

Section ---------- I

2. **Answer briefly any Eight parts from the followings:-** **8 × 2 = 16**

(i) Why 2nd ionization energy is greater than 1st ionization energy?
(ii) Why is diamond non-conductor but graphite is conductor?
(iii) What is general trend for the solubility of sulphates of alkaline earth metals?
(iv) Why lime is added to acidic soil? (v) How does $K_2Cr_2O_7$ oxidize the H_2S and $FeSO_4$?
(vi) How zinc coating prevents iron from corrosion?
(vii) How antiknocking agents are prepared from alkyl halides? (viii) What is wurtz synthesis?
(ix) What is function of nucleic acid? (x) How temperature affects the activity of enzymes?
(xi) How triglycerides are hydrolyzed? (xii) What is meant by dry cleaning in paper manufacturing?

3. **Answer briefly any Eight parts from the followings:-** **8 × 2 = 16**

(i) Why N_2O is called laughing gas? (ii) Write down any four uses of Nitric acid.
(iii) What are Freons and Teflon? (iv) Why HF is weaker acid than HCl? Justify.
(v) Define aromatic compound by giving two examples. (vi) How vital theory was rejected?
(vii) Convert methane into methyl alcohol. (viii) Write down the industrial preparation of Ethyne.
(ix) Mention the four physical properties of Ethene.
(x) Mention any two conditions which are required for the formation of smog.
(xi) Write short note on chemical oxygen demand. (COD)
(xii) Is detergent are threat to aquatic life? Justify.

4. **Answer briefly any Six parts from the followings:-** **6 × 2 = 12**

(i) Why are liquid silicones preferred over ordinary organic lubricants?
(ii) What is the action of an aqueous solution of borax on litmus?
(iii) How will you convert boric acid into borax and vice versa.
(iv) What is Wurtz-Fittig reaction? (v) How bakelite is produced? Give reaction.
(vi) How methanol and ethanol can be differentiated?
(vii) What is Tollen's test? Give reaction. (viii) How carboxylic acid is prepared from alkene?
(ix) Differentiate between essential and non-essential amino acids.

Section ---------- II

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

5. **(a)** What are the improvements made in the Mendeleev's periodic table?
(b) Describe the role of Gypsum in agriculture and industry. (Any four points of each)

6. **(a)** What happens when bleaching powder reacts with
(i) dil H_2SO_4 (ii) excess of conc. H_2SO_4 (iii) NH_3 (iv) CO_2
(b) What is meant by setting of cement? What are the reactions taking place in first twenty four hours and between one to seven days?

7. **(a)** Discuss sp^2 – hybridization with a suitable example.
(b) How would you prepare following compounds from Grignard reagent?
(i) 1-butanol (ii) 2-butanol (iii) Cyanogen chloride (iv) ethane

8. **(a)** How is ethene prepared by Kolbe's electrolytic method. Give its mechanism also.
(b) Give the reactions of acetone with. (i) HCN (ii) NH_2OH (iii) NH_2NH_2 (iv) $NaHSO_3$

9. **(a)** Describe oxidation reactions of Benzene and alkyl benzene.
(b) Explain the following terms
(i) Absolute alcohol (ii) Methylated spirit (iii) Rectified spirit (iv) Denaturing of alcohols

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(Inter Part – II) (Session 2020-22 to 2022-24) Sig. of Student ----------

Chemistry (Objective) Group – II Paper (II)

Time Allowed:- 20 minutes PAPER CODE 4482 Maximum 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

1) Which of the following metal does not form ionic hydride.
(A) Ba (B) Mg ● (C) Ca (D) Sr

2) The mineral $CaSO_4.2H_2O$ has the general name.
(A) Gypsum ● (B) Dolomite (C) Calcite (D) Epsom salt

3) Which of the following element is not present abundantly in earth's crust?
(A) Silicon (B) Aluminium (C) Sodium ● (D) Oxygen

4) Which catalyst is used in contact process
(A) Fe_2O_3 (B) V_2O_5 ● (C) SO_3 (D) Ag_2O

5) Which halogen will react spontaneously with Au to produce Au^{+3}?
(A) Br_2 (B) F_2 (C) I_2 (D) Cl_2 ●

6) The strength of binding energy of transition elements depends on
(A) Number of electron pairs (B) Number of unpaired electrons ● (C) Number of neutrons (D) Number of protons

7) In t-butyl alcohol, the tertiary carbon is bonded to
(A) Two hydrogen atoms (B) Three hydrogen atoms (C) One hydrogen atom (D) No hydrogen atom ●

8) Synthetic rubber is made by polymerization of
(A) Chloroform (B) Acetylene (C) Divinylacetylene (D) Chloroprene ●

9) The electrophile in aromatic sulphonation is
(A) H_2SO_4 (B) HSO_3^- (C) SO_3 ● (D) SO_3^+

10) Ethyl magnesium bromide react with water to form
(A) Ethane ● (B) Methane (C) Propane (D) Butane

11) Rectified spirit contains alcohol about
(A) 80% (B) 85% (C) 90% (D) 95% ●

12) The carbon atom of a carbonyl group is
(A) sp hybrid (B) sp^2 hybrid ● (C) sp^3 hybrid (D) None of those

13) Which of the following is not a fatty acid?
(A) Propanoic Acid (B) Acetic Acid (C) Phthalic Acid ● (D) Butanoic Acid

14) The reaction between fat and NaOH is called
(A) esterification (B) Hydrogenolysis (C) Fermentation (D) Saponification ●

15) Ammonium Nitrate fertilizer is not used for which crop.
(A) Cotton (B) Wheat (C) Sugar cane (D) Paddy rice ●

16) Ecosystem is a smaller unit of
(A) Lithosphere (B) Hydrosphere (C) Biosphere ● (D) Atmosphere

17) Which gas is not a pollutant
(A) SO_2 (B) CO (C) NO_2 (D) CO_2 ●

Sargodha Board-2024

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1224 (Inter Part - II) **(Session 2020-22 to 2022-24)**

Chemistry (Subjective) **(Group II)** **Paper (II)**

Time Allowed: 2.40 hours **Maximum Marks: 68**

Section ---------- I

2. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) What improvements were made in Mendleev's periodic table?
(ii) The radius of Na is 157 pm while that of Na^+ is 95 pm. Why?
(iii) What happens when Lithium carbonate and Lithium nitrates are heated?
(iv) Why is calcium important for plant growth? **(v)** How does acidified $KMnO_4$ Oxidize $FeSO_4$ and oxalic acid?
(vi) Why do the transition element show variable valency?
(vii) Why alkyl Iodides are the most reactive among alkyl halides?
(viii) What is leaving group. Give two examples. **(ix)** Write name of factors with affect the enzyme activity.
(x) What are the Differences between DNA and RNA? **(xi)** Define acid number and Iodine number with example.
(xii) Why wet process is favourable for manufacturing of cement in Pakistan?

3. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) NO_2 is a strong oxidizing agent. Prove the truth of this statement giving example.
(ii) Write down any four uses of sulphuric acid. **(iii)** Why HF is weaker acid than HCL? Justify.
(iv) What are Freons and Teflon? **(v)** Draw the various isomer of Pentane (C_5H_{12})
(vi) Why there is no free rotation around a double bond and a free rotation around a single bond. Justify.
(vii) How does ethyne react with (a) Halogen acid (b) Ammonical cuprous chloride
(viii) Write short note on acidity of Ethyne. **(ix)** Write down any four uses of ethene.
(x) Mention any two conditions which are required for the formation of smog.
(xi) Is detergents are threat to aquatic life? Justify. **(xii)** Write short note on dissolved oxygen (DO).

4. Answer briefly any Six parts from the followings:- **6 × 2 = 12**

(i) What is the alkanoic acid. How it is prepared from alkanol?
(ii) Justify the acidic and basic character of amino acids.
(iii) Prepare borax from (a) Colemanite (b) Boric acid
(iv) How "Al" reacts with hydrogen and halogen? **(v)** Justify "CO_2" is non polar in nature.
(vi) Write the name and structure of two aromatic compounds containing two benzene rings.
(vii) Why phenol is more acidic than alcohol? **(viii)** Ethanol has highest boiling point than di ethyl ether.
(ix) Write the oxidation reaction of aldehyde with (a) $K_2Cr_2O_7 / H_2SO_4$ (b) Tollen's reagent

Section ---------- II

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

5. (a) Define periodic table. What improvements are made in Mendeleev's periodic table?
(b) How sodium metal is produced by Down's cell. Sketch labelled Down's cell.

6. (a) What are "Disproportionation reactions"? Explain your answer with the reaction of chlorine with hot and cold NaOH.
(b) What do you understand by the term "Setting of cement"? Also discuss the reactions taking place in first 24 hours?

7. (a) What are the various sources of organic compounds? Give significance of Coal amongst these sources.
(b) Using ethyl bromide as a starting material how would you prepare the following compounds?
(i) n-butane (ii) Ethyl alcohol (iii) Ethene (iv) Ethane

8. (a) Explain the following reactions. (i) Ozonolysis of ethene (ii) Oxidation of ethyne by $KMnO_4$
(b) What is Cannizzaro's reaction? Write down its mechanism.

9. (a) Describe the stability of Benzene molecule by estimating Heats of Hydrogenation.
(b) Explain the following terms using ethyl alcohol as an example.
(i) Oxidation (ii) Dehydration (iii) Esterification (iv) Ether formation

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1223 **Warning:- Please write your Roll No. in the space provided and sign. Roll No.**

(Inter Part – II) *(Session 2019-21 to 2021-23)* **Sig. of Student**

Chemistry (Objective) **Group – I** **Paper (II)**

Time Allowed:- 20 minutes **PAPER CODE 4483** **Maximum 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

1) Vinyl acetylene combines with HCl to form:
(A) Polyacetylene (B) Benzene (C) Chloroprene (D) Divinyl acetylene

2) Which statement is correct?
(A) Metallic Character increases down the group (B) Metallic character increases from left to right along a period (C) Metallic character remains the same from left to right along a period (D) Metallic character remains the same down the group

3) Which of the following is not soluble in water:
(A) Sodium Sulphate (B) Potassium Sulphate (C) Zinc Sulphate (D) Barium Sulphate

4) Boric acid cannot be used:
(A) As antiseptic in medicine (B) For washing eyes (C) In soda bottles (D) For enamels and glazes

5) SO_3 is not absorbed in water directly to form H_2SO_4 because:
(A) The reaction does not go to completion (B) The reaction is quite slow (C) The reaction is highly exothermic (D) SO_3 is insoluble in water

6) Bleaching powder may be produced by passing chlorine over:
(A) Calcium carbonate (B) Hydrated calcium sulphate (C) Anhydrous calcium sulphate (D) Calcium hydroxide.

7) Coordination number of Pt in [Pt Cl (NO_2) $(NH_3)_4$] is:
(A) 2 (B) 4 (C) 1 (D) 6

8) Absolute alcohol can be obtained by redistillation of rectified spirit in the presence of:
(A) Na_2O (B) CuO (C) Ag_2O (D) CaO

9) Aromatic compounds burn with sooty flame because:
(A) They have high percentage of hydrogen (B) They have a ring structure (C) They have high percentage of carbon (D) They resist reaction with air.

10) The rate of E1 reaction depends upon:
(A) The concentration of substrate (B) The concentration of nucleophile (C) The concentration of substrate as well as Nucleophile (D) The concentration of eliminated group

11) Linear shape is associated with which set of hybrid orbital?
(A) sp (B) sp^2 (C) sp^3 (D) dsp^2

12) Which compound shows maximum hydrogen bonding with water:
(A) CH_3OH (B) $C_5H_{11}OH$ (C) CH_3-O-CH_3 (D) C_6H_5OH

13) Iodoform is prepared by the reaction of Iodine with:
(A) Acetic acid (B) Formic acid (C) Acetone (D) Diethyl ether

14) Methyl Magnesium bromide combine with CO_2 to form
(A) Ethyl alcohol (B) Diethyl ether (C) Acetic acid (D) Acetone

15) Oils are glycerol esters which contain higher proportion of:
(A) Unsaturated hydro carbons components (B) Saturated hydro carbons components (C) Unsaturated fatty acid components (D) Saturated fatty acid components

16) Urea is a high quality nitrogeneous fertilizer. It contains about:
(A) 60% Nitrogen (B) 70% Nitrogen (C) 46% Nitrogen (D) 20% Nitrogen

17) Methane has a mean residence time of about years in the atmosphere:
(A) 2-5 years (B) 1-2 years (C) 3-7 years (D) 4-6 years

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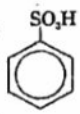
1223 (Inter Part - II) (Session 2019-21 to 2021-23)

Chemistry (Subjective) (Group I) Paper (II)

Time Allowed: 2.40 hours Maximum Marks: 68

Section ---------- I

2. Answer briefly any Eight parts from the followings:- 8 × 2 = 16

(i) Give equation when borax is heated with NH_4Cl (ii) What is COD? Give its significance.
(iii) Give any four uses of Aluminium. (iv) Give the names and formulas of acids of Boron.
(v) What is Wurtz-Fittig reaction? (vi) Convert toluene into benzoic acid.
(vii) Give the importance of Lipids. (Four points). (viii) Complete the reaction:  + HOH ⟶
(ix) What are isomerase enzymes? Give one example.
(x) Differentiate between DNA and RNA. (Two points). (xi) How water is purified by aeration? Discuss.
(xii) Give the role of atmosphere gases for sustaining life on earth.

3. Answer briefly any Eight parts from the followings:- 8 × 2 = 16

(i) Why there is no free rotation around a double bond and a free rotation around a single bond?
(ii) How wood is transformed into coal? (iii) Identify each lettered product in the following reaction.

$$Propene \xrightarrow{Br_2} D \xrightarrow[KOH]{Alcoholic} E$$

(iv) Write the test to check unsaturation in the unsaturated hydrocarbons.
(v) Give two uses of ethyne. (vi) Why does aqua regia dissolve gold?
(vii) P_2O_5 is a powerful dehydrating agent. Prove it giving two examples.
(viii) Describe " Ring test " for the confirmation of presence of nitrate ions in solution.
(ix) What is β-elimination reaction? Give example.
(x) Give IUPAC names of the following compounds: a) $(CH_3)_2$ CHBr b) CH_2 Cl_2
(xi) Name three principle methods of chemical pulping of paper.
(xii) Write names of four argillaceous raw materials used in manufacture of cement?

4. Answer briefly any Six parts from the followings:- 6 × 2 = 12

(i) Describe chromyl chloride test. Write its equation.
(ii) Why does damaged tin plated iron get rusted quickly?
(iii) What are chelates? Give an example. (iv) Convert acetaldehyde into lactic acid.
(v) Ethanol gives different products with Conc. H_2SO_4 under different conditions. Write equations.
(vi) How is Bakelite prepared? Give its equation.
(vii) Write two reactions of ethanol involving the cleavage of O-H bond.
(viii) What is Fehling's solution test? Write its chemical equation.
(ix) How does CH_3COOH react with NaOH and $NaHCO_3$?

Section ---------- II

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

5. (a) What are Halides? Name their types by giving two properties of each type.
   (b) How do carbonates and nitrates of Li differ from those of other Alkali metals.
6. (a) Write down the construction and working of Beckmann's method for manufacturing of bleaching powder.
   (b) What is meant by "setting of cement". Describe the reactions involved in setting of cement during 1 to 7 days.
7. (a) What is hybridization? Describe the hybridization to explain the structure of alkynes in detail.
   (b) Describe the mechanism of: (i) Halogenation of benzene. (ii) Sulphonation of benzene
8. (a) Describe the mechanism of Kolbe's electrolytic method for the preparation of alkyne.
   (b) By using Grignard reagent prepare:
   (i) Primary alcohol (ii) Secondary alcohol (iii) Ter. alcohol (iv) Alkane
9. (a) Explain the mechanism of the reaction of phenylhydrazine with acetone.
   (b) Write down the mechanism of acetic acid and ammonia.

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(Inter Part – II) (Session 2019-21 to 2021-23) Sig. of Student ----------

Chemistry (Objective) Group – II Paper (II)

Time Allowed:- 20 minutes **PAPER CODE 4488** **Maximum 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

1) An element that has a high ionization energy and tends to be chemically inactive would most likely to be:
(A) An alkali metal (B) A transition element (C) A noble gas (D) A halogen

2) Group VI-B transition elements contains:
(A) Zn, Cd, Hg (B) Fe, Ru, Os (C) Cr, Mo, W (D) Mn, Te, Re

3) In t-butyl alcohol, the tertiary carbon is bonded to:
(A) Two hydrogen atoms (B) Three hydrogen atoms (C) One hydrogen atom (D) No hydrogen atom

4) 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

5) Which ion will have the maximum value of heat of hydration?
(A) Na^+ (B) Cs^+ (C) Ba^{2+} (D) Mg^{2+}

6) Which element belongs to Group IV-A of the periodic table?
(A) Barium (B) Iodine (C) Lead (D) Oxygen

7) Laughing gas is chemically.
(A) NO (B) N_2O (C) NO_2 (D) N_2O_4

8) Formula of chloroform is:
(A) CH_3Cl (B) CCl_4 (C) CH_2Cl_2 (D) $CHCl_3$

9) Select the one which is a copolymer?
(A) Polythene (B) Polystyrene (C) Polyvinyl acetate (D) Nylon-6,6

10) Which one is frequently used to disinfect water?
(A) Sodium chloride (B) Hydrochloric acid (C) Chlorine (D) Sodium hydroxide

11) Diammonium phosphate fertilizer contains how much percentage of nitrogen?
(A) 48% (B) 16% (C) 75% (D) 46%

12) During nitration of benzene, the active nitrating agent is:
(A) NO_3 (B) NO_2^+ (C) NO_2 (D) HNO_3

13) The rate of E1 reaction depends upon:
(A) The concentration of substrate (B) The concentration of nucleophile (C) The concentration of substrate as well as nucleophile (D) None of the above

14) Rectified spirit contains ethyl alcohol about
(A) 80% (B) 85% (C) 90% (D) 95%

15) Which one is not an alcohol?
(A) CH_3OH (B) CH_3CH_2OH (C) $CH_3CH_2CH_2OH$ (D) CH_3COOH

16) Primary alcohols are formed when Grignard's reagent reacts with:
(A) Formaldehyde (B) Acetaldehyde (C) Acetone (D) Water

17) Acetic acid exists as_____ in benzene:
(A) A dimer (B) A trimer (C) A monomer (D) A tetramer

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1223 (Inter Part - II) (Session 2019-21 to 2021-23)

Chemistry (Subjective) (Group II) Paper (II)

Time Allowed: 2.40 hours Section ---------- I Maximum Marks: 68

2. Answer briefly any Eight parts from the followings:- 8 × 2 = 16

(i) Give any two points of differences of carbon from its family members.
(ii) Give chemistry of Borax bead test. (iii) What is chemical garden?
(iv) Why $-CH_3$ group direct the incoming substituent at ortho and para position in toluene.
(v) What is Wurtz-Fittig reaction for preparation of Alkyl aromatic Hydrocarbon.
(vi) How did kekule support his theory about structure of benzene? Give two points.
(vii) What are thermo setting polymers? Give two examples.
(viii) What do you mean by hydrolysis? Support your answer with hydrolysis of lipids.
(ix) What are carbohydrates? Name their types. (x) What are conditions for formation of smog?
(xi) Mention two natural sources for release of methane in air.
(xii) Give difference between primary and secondary pollutants with one example in each case.

3. Answer briefly any Eight parts from the followings:- 8 × 2 = 16

(i) What are heterocyclic compounds? Give two examples. (ii) Why are organic reactions slow?
(iii) What is Markownikov's rule? Give one example (iv) How is acetaldehyde produced from ethyne?
(v) Why are alkanes called as paraffins? (vi) What is Ring test?
(vii) Write down any four similarities between oxygen and sulphur. (viii) Write down any four uses of HNO_2
(ix) How are anti-knocking agents produced from alkyl halides?
(x) Differentiate between nucleophile and electrophile.
(xi) Differentiate between micro-nutrients and macro-nutrients?
(xii) Enlist different stages for manufacturing of cement by wet process?

4. Answer briefly any Six parts from the followings:- 6 × 2 = 12

(i) How are chromate ions converted into dichromate ions?
(ii) What will happen when potassium dichromate react with (a) KI (b) $FeSO_4$
(iii) Define the co-ordination sphere with one example.
(iv) Write the two reactions of alcohol in which 'O–H' bond is broken.
(v) What do you know about Williamson's synthesis?
(vi) How will you convert methanol into ethanol.
(vii) Starting from aldehyde prepare Metaformaldehyde and Paraldehyde.
(viii) Write the Fehling solution test. (ix) Write down the mechanism of the reaction of acetic acid and ammonia.

Section ---------- II

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

5. (a) What are hydrides? Discuss their classification.
   (b) Explain the peculiar behaviour of Lithium (Give eight points).
6. (a) Write down the reactions of chlorine with cold and hot NaOH
   (b) What are fertilizers? Write any four essential qualities of good fertilizer.
7. (a) Define orbital hybridization. Explain sp^2 hybridization with the structure of ethene.
   (b) What is Friedal Crafts acylation? Explain its mechanism.
8. (a) Write structural formulae of the following compounds.
   (i) 3-Ethylpentane. (ii) 2,2,3,4- tetramethyl pentane.
   (iii) 2,2-Dimethylbutane. (iv) 4-Ethyl-3,4-dimethylpentane.
   (b) Draw eight possible structures that have the molecular formula $C_6H_{13}Cl$ and also classify them.
9. (a) Write a detailed note on Cannizzaro's reaction.
   (b) Give the reaction of CH_3COOH with $SOCl_2$. Also give mechanism.

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(Inter Part – II) (Session 2017-19 to 2019-21) Sig. of Student ----------

Chemistry (Objective) **Group – I** **Paper (II)**

Time Allowed:- 20 minutes **PAPER CODE 4485** Maximum 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

1) Which of the following derivative cannot be prepared directly from acetic acid.
(A) Acetamide (B) Acetylchloride (C) Ethylacetate (D) Acetic anhydride

2) For which crop ammonium nitrate fertilizer is not used
(A) Cotton (B) Wheat (C) Sugar cane (D) Paddy rice

3) Mark the correct statement.
(A) Metallic character increases down the group (B) Metallic character increases from left to right in a period (C) Metallic character remains the same down the group (D) Metallic character remains the same from left to right in a period

4) Down's cell is used to prepare
(A) Sodium carbonate (B) Sodium metal (C) Sodium bicarbonate (D) Sodium hydroxide

5) Which element forms ion with charge +3
(A) Be (B) Al (C) Si (D) C

6) Among group VA elements, the most electronegative element is
(A) Sb (B) N (C) P (D) AS

7) Which is the strongest acid in aquous solution
(A) HClO (B) $HClO_3$ (C) [illegible] (D) $HClO_4$

8) The anhydride of $HClO_4$ is
(A) ClO_2 (B) ClO_3 (C) Cl_2O_3 (D) Cl_2O_7

9) Which of the following is a non typical transition element
(A) Cr (B) Mn (C) Zn (D) Fe

10) Select from the following the one which is alcohol?
(A) CH_3-CH_2-Br (B) CH_3-CH_2-OH (C) H_3C-O-CH_3 (D) H_3C-COOH

11) β, β' – dichloroethyl sulphide is commonly known as
(A) Mustard gas (B) Laughing gas (C) Phosgene gas (D) Bio-gas

12) Which one of the following groups is meta director
(A) -OH (B) $-NH_2$ (C) $-NO_2$ (D) $-OCH_3$

13) Which one of the following is not a nucleophile?
(A) H_2O (B) H_2S (C) BF_3 (D) NH_3

14) Methyl alcohol is not used as
(A) A solvent (B) An anti-freezing agent (C) A substitute for petrol (D) Denaturing agent

15) Formalin is
(A) 10 % solution of formaldehyde in water (B) 20 % solution of formaldehyde in water (C) 40 % solution of formaldehyde in water (D) 60 % solution of formaldehyde in water

16) Acetone reacts with HCN to form a cyanohydrin is an example of
(A) Electrophilic addition reaction (B) Electrophilic substitution reaction (C) Nucleophilic addition reaction (D) Nucleophilic substitution reaction

17) Which acid is used in the manufacture of synthetic fibre.
(A) Malonic acid (B) Acetic acid (C) Oxalic acid (D) Phthalic acid

Warning:- Please, do not write anything on this question paper except your Roll No.

1221 (Inter Part - II) (Session 2017-19 to 2019-21)

Chemistry (Subjective) **(Group I)** **Paper (II)**

Time Allowed: 2.40 hours Maximum Marks: 68

Section ---------- I

2. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) The hydration energies of the ions are in the following order. Why? $Al^{+3} > Mg^{+2} > Na^{+1}$

(ii) Lanthanide contraction controls the atomic sizes of elements of 6th and 7th periods.

(iii) What is the effect of heat on $CaSO_4.2H_2O$?

(iv) The reaction of alkali metal oxide with water is an acid-base reaction and not an oxidation reduction reaction, why?

(v) How carbon differs from remaining members of group IV-A elements.

(vi) What are the common properties of group IV-A elements. **(vii)** Give two uses of Boric acid.

(viii) Give two reactions for the preparation of Dinitrogen oxide (N_2O).

(ix) Give equation to describe the reaction of NO_2 with H_2S and KI.

(x) What is meant by prilling? **(xi)** Describe the composition of a good portland cement.

(xii) What are essential nutrient elements and why these are needed for plant growth?

3. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) Why HF is weaker acid than HCl? **(ii)** Draw Structural formula of OF_2 and O_2F_2.

(iii) What is the oxidation state of chlorine in $HClO_4$ and HClO?

(iv) What is Paramagnetism? Give example. **(v)** Discuss Cathode Coating.

(vi) Draw resonance Structures of Benzene. **(vii)** Convert n-Hexane into Benzene.

(viii) What is the composition of formalin? **(ix)** How would you differentiate between methanol and Ethanol?

(x) How Acetic Acid is prepared from Acetylene?

(xi) Name the Esters which produce Jasmine and Pineapple flavours.

(xii) "Boiling point of Carboxylic Acid is relatively high" Justify.

4. Answer briefly any Six parts from the followings:- **6 × 2 = 12**

(i) Define functional group, Give one example.

(ii) Differentiate between catalytic and steam cracking.

(iii) Discuss reactivity of π – bond.

(iv) Give mechanism of bromination of ethene.

(v) Write industrial preparation of ethyne.

(vi) Write any four differences between E_1 and E_2 reactions.

(vii) Define electrophile and nucleophile.

(viii) Discuss the denaturing of alcohol.

(ix) How is Bakelite prepared? Give reaction.

Section ---------- II

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

5. (a) Define ionization energy, on what factors it depends. Give its periodic trend.

(b) Describe Commercial preparation of sodium metal by Down's Cell.

6. (a) H_2SO_4 is a dehydrating agent and oxidizing agent, prove this truth by giving two examples of each.

(b) Describe following general characteristics of transition elements.
(i) Melting and boiling point. (ii) Covalent and ionic radii

7. (a) Explain the Structures of Ethane and ethyne based on hybridization.

(b) What is Cannizarro's reaction? Give its mechanism.

8. (a) Give any two methods of preparation of alkene (ethene) and also give two oxidation reactions of ethene.

(b) Differentiate between S_N1 and S_N2 reactions.

9. (a) Explain the comparison of reactivities of Alkanes, Alkenes & Benzene.

(b) How will you convert phenol into
(i) Benzene (ii) Picric Acid (iii) Cyclohexanol (iv) Bakelite

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Inter Part – II) (Session 2017-19 to 2019-21) Sig. of Student ----------

emistry (Objective) **Group – II** **Paper (II)**

ime Allowed:- 20 minutes **PAPER CODE 4488** Maximum Marks:- 17

lote:- 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

1) Which reagent is used to reduce a carboxylic acid to an alcohol.
(A) H_2/Ni (B) H_2/Pt (C) $NaBH_4$ (D) $LiAlH_4$

2) An aqueous solution of an organic compound reacts with Na_2CO_3 to produce CO_2 gas. Which one of the following could be organic compound
(A) $CH_2 = CH - CH_3$ (B) CH_3CH_2COOH (C) CH_3COCH_3 (D) CH_3CHO

3) Phosphorous helps in growth of
(A) Root (B) Leave (C) Stem (D) Seed

4) Mark the correct statement.
(A) Cl^- (ion) and Cl (atom) are equal in size (B) Cl^- ion is smaller than Cl atom (C) Na^+ is larger than Na-atom (D) Na^+ is smaller than Na-atom

5) The mineral $CaSO_4.2H_2O$ has the general name.
(A) Dolomite (B) Calcite (C) Epsom (D) Gypsum.

6) The Chief ore of Aluminium is
(A) Na_3AlF_6 (B) $Al_2O_3.H_2O$ (C) Al_2O_3 (D) $Al_2O_3.2H_2O$

7) Which of the following species has the maximum number of unpaired electrons.
(A) O_2 (B) O_2^{+2} (C) O_2^{+1} (D) O_2^{-2}

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

9) Which halogen occurs naturally in a positive oxidation state.
(A) Bromine (B) Iodine (C) Chlorine (D) Fluorine

10) The colour of transition metal complexes is due to
(A) d – d transition of electrons (B) Paramagnetic nature of transition of elements (C) Ionization (D) Loss of s-electrons

11) Linear shape is associated with which set of hybrid orbitals
(A) dsp^2 (B) sp^3 (C) sp (D) sp^2

12) Vinyl acetylene combines with HCl to form
(A) Phenyl acetylene (B) Benzene (C) Chloroprene (D) Divinyl acetylene

13) Benzene cannot undergo
(A) Substitution reactions (B) Addition reactions (C) Oxidation reactions (D) Elimination reactions

14) For which mechanism, the first step involved is same.
(A) E1 & E2 (B) E2 & S_N2 (C) S_N1 and E2 (D) E1 & S_N1

15) Which compound is called a universal solvent.
(A) H_2O (B) CH_3OH (C) C_2H_5OH (D) CH_3-O-CH_3

16) Which of the following will have the highest boiling point.
(A) Methanal (B) Ethanal (C) 2-Hexanone (D) Propanal

17) Acetone reacts with HCN to form a cyanohydrin. It is an example of
(A) Electrophilic addition (B) Electrophilic substitution (C) Nucleophilic addition (D) Nucleophilic substitution

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221 (Inter Part - II) (Session 2017-19 to 2019-21)

Chemistry (Subjective) **(Group II)** **Paper (II)**

Time Allowed: 2.40 hours Maximum Marks: 68

Section ---------- I

2. **Answer briefly any Eight parts from the followings:-** **8 × 2 = 16**

(i) Why Second ionization Energy is higher than First ionization Energy?
(ii) Define Hydration Energy. Give example also.
(iii) Give chemical formula of Carnallite and Barite.
(iv) What is Plaster of Paris? (v) Give two Points regarding Peculiar behaviour of Boron.
(vi) Give two important uses of Boric Acid. (vii) "Boric Acid is a weak Acid". Justify.
(viii) What do you know about Ring Test?
(ix) How H_2SO_4 acts as oxidizing Agent? Give two reactions.
(x) How would you prepare Diammonium Phosphate fertilizer?
(xi) What do you know about Slurry? (xii) Write down two qualities of a good fertilizer.

3. **Answer briefly any Eight parts from the followings:-** **8 × 2 = 16**

(i) Why HF is weaker acid than HCl? (ii) What are disproportionation reactions? Give one example
(iii) What is meant by available chlorine? (iv) Define interstitial alloys.
(v) A damaged tin plated iron get rusted quickly comment.
(vi) Define resonance energy. Give one example. (vii) Describe Wurtz-Fitting reaction with one example.
(viii) Give the use of Tollen's test. (ix) How $NaHSO_3$ is added to acetone, give mechanism.
(x) Write any two methods of preparation of Acetic acid.
(xi) Give reactions of acetic acid with (a) PCl_5 (b) NaOH
(xii) Explain oxidative cleavage of alkene briefly.

4. **Answer briefly any Six parts from the followings:-** **6 × 2 = 12**

(i) How octane number of alkanes can be improved.
(ii) Define tautomerism by giving one example.
(iii) Why alkanes are called paraffins?
(iv) Give the formation of formic acid by catalytic oxidation of alkane.
(v) Define electrophile. Give examples.
(vi) What is β – Elimination reaction? Give an example of $\beta - E2$ elimination reaction.
(vii) What is meant by denaturing of Alcohol?
(viii) Why Absolute Alcohol cannot be prepared by fermentation method?
(ix) How acetaldehyde can be prepared from an alkyne?

Section ---------- II

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

5. (a) Define oxidation state. Give its trend in the Periodic Table.
   (b) How Down's Cell is used to prepare pure Sodium metal?
6. (a) Describe the chemistry of the industrial preparation of sulphuric acid from sulphur by the contact process
   (b) Give any Four properties of Transition Elements.
7. (a) Discuss in detail cis-Trans Isomerism.
   (b) Describe with mechanism Aldol condensation reaction. Why Formaldehyde does not give this reaction?
8. (a) Give Kolbe's Electrolytic Method for the preparation of Alkanes with Mechanism.
   (b) Write a detailed note on S_N2 reactions of alkyl halides.
9. (a) Explain the structure of Benzene by Resonance Method.
   (b) Write the reaction of phenol with following.
   (i) NaOH (ii) CH_3COCl (iii) Zn (iv) Br_2

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(Inter Part – II) (Session 2015-17 to 2017-19) Sig. of Student ----------

Chemistry (Objective) **(Group – I)** **Paper II**

Time Allowed:- 20 minutes **PAPER CODE 4485** Maximum 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed. **Q. 1**

1. Which is not a calcarious material?
(A) Clay (B) Lime (C) Marble (D) Marine Shell
2. The main pollutant of leather tanneries in the waste water is due to the salt of?
(A) Lead (B) Chromium (VI) (C) Copper (D) Chromium (III)
3. Which is more acidic oxide in the following?
(A) MnO (B) Mn_2O_3 (C) MnO_2 (D) Mn_2O_7
4. General name of mineral $MgSO_4 \cdot 7H_2O$ is?
(A) Gypsom (B) Dolomite (C) Calcite (D) Epsom salt
5. Chemical formula of litharge is?
(A) Pb_2O (B) SiO_2 (C) PbO (D) Pb_3O_4
6. The lowest ionization energy is possessed by?
(A) P (B) N (C) Sb (D) As
7. Which is the strongest oxidizing agent in the following?
(A) I_2 (B) Cl_2 (C) F_2 (D) Br_2
8. Which one of these elements is a typical transition element?
(A) Ni (B) Zn (C) Cd (D) Hg
9. Number of possible chain isomers of an alkane C_5H_{12} are?
(A) 2 (B) 3 (C) 4 (D) 5
10. Structural formula of vinyl chloride is
(A) $HC \equiv C - Cl$ (B) $H_2C = CHCl$ (C) $H_3C - CHCl_2$ (D) $H_2\underset{Cl}{C} - \underset{Cl}{C}H_2$
11. Which one of the following species is an electron withdrawing?
(A) $-CH_3$ (B) $-\dot{C}HO$ (C) $-OH$ (D) $-NH_2$
12. When ethyl magnesium bromide is reacted with HCHO, followed by acid hydrolysis, the product formed is?
(A) Ethanol (B) 1-propanol (C) 2-propanol (D) Ethanoic acid
13. Which compound will have maximum repulsion with water?
(A) H_5C_2OH (B) H_3COH (C) C_6H_6 (D) $H_3C - O - CH_3$
14. Which one of the following compounds will react with Fehling's solution?
(A) HCOOH (B) $H_3C \cdot CHO$ (C) H_3CCOOH (D) $H_3C - COCH_3$
15. Chemical formula of glycine is?
(A) H_3CCOOH (B) $H_3C \cdot CHO$ (C) $H_2N \cdot CH_2COOH$ (D) $H_3C \cdot CO \cdot CH_3$
16. Which nitrogeneous base is not present in RNA?
(A) Thiamine (B) Cytosine (C) Adenine (D) Uracil
17. Which of these polymers is a synthetic polymer?
(A) Animal fat (B) Starch (C) Cellulose (D) Polyester

Warning:- Please, do not write anything on this question paper except your Roll No.

1219 (Inter Part-II) (Session 2015-17 to 2017-19)

Chemistry (Subjective) **Group – I** Paper II

Time Allowed: 2.40 hours Maximum Marks: 68

SECTION ---------- I

2. Answer briefly any EIGHT parts from the followings:- 8×2=16

(i) Write two properties of covalent hydrides

(ii) Define Lanthanides and Actinides.

(iii) Complete and balance the following equations (a) $Li_2CO_3 + heat \Rightarrow$ (b) $NaNO_3 + heat \Rightarrow$

(iv) Justify that CO_2 is acidic in nature.

(v) How Borax is used as water softening agent.

(vi) How H_3BO_3 reacts with (a) C_2H_5OH (b) $NaOH$

(vii) What is aqua regia. How is it dissolves the gold.

(viii) Write chemical Equations showing effect of temperature on H_3PO_4

(ix) How temperature affects the gaseous Nitrogen di-oxide (NO_2)

(x) Why NH_4NO_3 is not used as fertilizer for paddy rice.

(xi) What do you mean by setting of cement.

(xii) What is Biochemical oxygen demond (BOD)

3. Answer briefly any EIGHT parts from the followings:- 8×2=16

(i) Write down the useful by-products obtained in the process of cracking.

(ii) What is Clemmensen reduction? Give an example.

(iii) Why alkanes are less reactive than alkenes?

(iv) Write down the structural formulas of (a)Naphthalene (b)Phenanthrene

(v) Write down five resonance structures of benzene.

(vi) Give IUPAC names of the following compounds. (a) $(CH_3)_3C-CH_2-Cl$ (b) $(CH_3)_2CHBr$

(vii) What are Grignard's reagents. How are these produced?

(viii) How Phenol is prepared by Dow's process?

(ix) How Phenol reacts with formaldehyde?

(x) Write down the formulas of (a) Palmitic acid (b) Iso-Butyric acid

(xi) How can you convert acetic acid into (a) Methane (b) Acetyl chloride

(xii) Write down the mechanism for the reaction between CH_3COOH and NH_3

4. Answer briefly any SIX parts from the followings:- 6×2=12

(i) Complete and balance following equations. (a) $HClO_4 + P_2O_5 \xrightarrow{-10\ ^\circ C}$ (b) $HgO + Br_2 \xrightarrow{50\ ^\circ C}$

(ii) Write order of acid strength of oxyacids of chlorine.

(iii) What happens when bleaching powder reacts with (a) $conc.H_2SO_4$ (b) NH_3

(iv) Give systematic names to following complexes (a) $K_2[PtCl_6]$ (b) $[Co(NH_3)_4]Cl_3$

(v) Write industrial method for the preparation of formaldehyde.

(vi) What is Cannizzaro's reaction? Give an example.

(vii) Define thermoplastic and thermosetting polymers.

(viii) What are polyester resins? Give an example with reaction equation.

(ix) What is meant by denaturing of proteins.

SECTION ---------- II

Note: Attempt any three questions from the following. (8 × 3 = 24)

5. (a) How does the classification of elements in different blocks help in understanding their chemistry

(b) How is sodium metal extracted by Down's cell? Describe the products formed by this cell on different electrodes by balanced chemical equation.

6. (a) Explain the electrochemical theory for corrosion.

(b) What is smog? Explain the pollutants which are the main causes of photochemical smog.

7. (a) Define Isomerism and explain any two types of structural isomerism with examples.

(b) Discuss the stability of benzene in detail with reference to 1,3,5 - cyclohexatriene.

8. (a) Explain the polymerization of acetylene in detail.

(b) Describe the preparation of ethyl alcohol by fermentation of starch and molasses.

9. (a) How does acetaldehyde react with (i) C_2H_5MgBr (ii) $NaHSO_3$ (iii) NH_2OH (iv) N_2H_4

(b) Write a detailed note on S_N2 reactions of alkyl halides.

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(Inter Part – II) (Session 2015-17 to 2017-19) Sig. of Student ----------

Chemistry (Objective) **Group – II** **Paper (II)**

Time Allowed:- 20 minutes **PAPER CODE 4488** Maximum 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed. **Q.1**

1) Which of these polymers is an addition polymer?
(A) Nylon-6,6 (B) Polystyrene (C) Terylene (D) Epoxy resin

2) The reaction between fat and NaOH is called
(A) Esterification (B) Hydrogenolysis (C) Fermentation (D) Saponification

3) 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

4) Newspaper can be recycled again and again by how many times?
(A) 5 (B) 4 (C) 3 (D) 2

5) Mark the correct statement.
(A) Na^+ is smaller than Na atom (B) Na^+ is larger than Na atom (C) Cl^- (ion) is smaller than Cl atom (D) Cl^- (ion) and Cl atom are equal in size

6) Which ion will have the maximum value of heat of hydration?
(A) Na^+ (B) Cs^{2+} (C) Ba^{2+} (D) Mg^{2+}

7) Tincal is a mineral of
(A) Al (B) B (C) Si (D) C

8) Laughing gas is chemically
(A) NO (B) N_2O (C) NO_2 (D) N_2O_4

9) Which is the strongest acid?
(A) $HC\ell O$ (B) $HC\ell O_2$ (C) $HC\ell O_3$ (D) $HC\ell O_4$

10) The total number of transition elements is
(A) 10 (B) 14 (C) 40 (D) 58

11) Ethers show the phenomenon of
(A) Position isomerism (B) Cis-trans isomerism (C) Metamerism (D) Functional group isomerism

12) Formula of Chloroform is
(A) CH_3Cl (B) CCl_4 (C) CH_2Cl_2 (D) $CHCl_3$

13) Which compound is the most reactive one?
(A) Benzene (B) Ethene (C) Ethane (D) Ethyne

14) Grignard's reagent is reactive due to
(A) The presence of halogen atom (B) The presence of Mg atom (C) The polarity of C-Mg bond (D) The polarity of Mg-X bond

15) According to Lewis concept ethers behave as
(A) Acid (B) Base (C) Acid as well as base (D) Neutral

16) Cannizzaro's reaction is not given by
(A) Formaldehyde (B) Acetaldehyde (C) Benzaldehyde (D) Trimethyl-acetaldehyde

17) The solution of which acid is used for the seasoning of food?
(A) Formic acid (B) Acetic acid (C) Benzoic acid (D) Butanoic acid

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1219 (Inter Part - II) (Session 2015-17 to 2017-19)

Chemistry (Subjective) **(Group II)** **Paper (II)**

Time Allowed: 2.40 hours Maximum Marks: 68

Section ---------- I

2. **Answer briefly any Eight parts from the followings:-** $8 \times 2 = 16$

(i) Why alkali metals give ionic hydrides?
(ii) Write down similarities of hydrogen with group IVA elements.
(iii) Give justification for the use of potassium superoxide in breathing equipments of space crafts.
(iv) Write down the chemical formulae of minerals (a) Kaolin (b) Cryolite
(v) Write down the effect of heat on Boric acid.
(vi) How kaolin differs from ordinary clay? (vii) Write two methods of preparation of NO_2
(viii) How nitrous acid reacts with $CO(NH_2)_2$ and $C_6H_5NH_2$?
(ix) How Orthophosphoric Acid is prepared on large scale?
(x) Mention industrial importance of proteins.
(xi) Write down the names of two enzymes used in the diagnosis of diseases.
(xii) How carbon monoxide acts as highly poisonous gas?

3. **Answer briefly any Eight parts from the followings:-** $8 \times 2 = 16$

(i) What is vital force theory, why it was rejected.
(ii) Write structural formulas for the following compounds (a) But-1-ene -3-yne (b) divinyl acetylene
(iii) What is Raney Nickel. How it is prepared.
(iv) Write down the formulas of the followings (a) Anthracene (b) Phenanthrene
(v) How will you prepare 2,4,6-Trinitrotoluene from benzene in two steps.
(vi) What are primary and tertiary alkyl halides. Give one example each.
(vii) Write reaction of ethyl magnesium chloride with methanal.
(viii) Write structural formulas of the following compounds (a) Carbolic acid (b) Glycerol
(ix) How ether is prepared by Williamson synthesis.
(x) Write structural formulas of the following compounds. (a) Oxalic acid (b) Malonic acid
(xi) Write any four uses of Acetic acid. (xii) What are amino acids, give their general formula.

4. **Answer briefly any Six parts from the followings:-** $6 \times 2 = 12$

(i) Write any two applications of a noble gas Argon. (ii) Justify that HF is a weaker acid than HCl.
(iii) What is Teflon. Give its any two uses. (iv) Why transition elements exhibits variable valency.
(v) Complete the following reactions (a) $Formaldehyde + NaHSO_3 \longrightarrow$ (b) $Acetone + NaHSO_3 \longrightarrow$
(vi) Write Industrial method for the preparation of formaldehyde.
(vii) Write any two points of difference between DNA and RNA.
(viii) What is Glycogen? (ix) Write down difference between polypeptide and protein.

Section ---------- II

Note: Attempt any three questions. $(8 \times 3 = 24)$

5. (a) What are the improvements made in the Mendeleev's periodic table?
   (b) What is the function of calcium in plant growth?
6. (a) State the different rules for naming the co-ordination complexes according to IUPAC system?
   (b) What is acid rain? How does it affect our environment?
7. (a) Discuss cis-trans isomerism, giving two examples.
   (b) Describe the stability of benzene on the basis of heat of hydrogenation.
8. (a) Write down the reaction with mechanism for the preparation of alkene by Kolbe's Electrolytic method.
   (b) How methanol is prepared on industrial scale? Why is it called wood spirit?
9. (a) Describe S_N2 mechenism in detail. (b) What is aldol condensation? Discuss its mechenism.

Warning:- Please, do not write anything on this question paper except your Roll No.

1218 (Inter Part-II) (Session 2015-17 & 2016-18)

Chemistry (Subjective) **Group – I** Paper (II)

Time Allowed: 2.40 hours Maximum Marks: 68

SECTION ———— I

2. Answer briefly any EIGHT parts from the followings:- 8×2=16

(i) ZnO is amphoteric in nature. Justify.

(ii) Diamond is bad conductor while graphite is a good conductor why?

(iii) How is lime mortar prepared?

(iv) Write formulae of the following ores.(i) Talc (ii) Zircon

(v) Write two uses of Aluminium.

(vi) Give chemistry of Borax-bead Test.

(vii) P_2O_5 is a powerful dehydrating agent. Show with two examples.

(viii) What is aqua Regia? How does it dissolves gold?

(ix) What are heterocyclic compounds? Give two examples.

(x) What is Biochemical Oxygen demand?

(xi) What is Biosphere?

(xii) How does H_2SO_4 react with (i) Zn (ii) Cu

3. Answer briefly any EIGHT parts from the followings:- 8×2=16

(i) Name different forms of Iron and mention which is the purest form.

(ii) What do you mean by the term Galvanizing.

(iii) Define functional group and write two oxygen containing functional groups.

(iv) Convert ethene to (a) Halohydrin (b) Ethylene oxide

(v) Why alkene is more reactive than benzene?

(vi) Write two possible structures of C_4H_9Cl.

(vii) What is Dow's method for the preparation of phenol.

(viii) How methanol and ethanol can be distinguished; give a suitable test for this.

(ix) Describe Tollen's test for the identification of aldehydes.

(x) Write any four uses of formaldehyde.

(xi) How acetamide is formed from acetic acid.

(xii) Differentiate between acidic amino acids and basic amino acids.

4. Answer briefly any SIX parts from the followings:- 6×2=12

(i) What is glycogen? Give its properties.

(ii) What is the chemical nature of Enzymes?

(iii) What do you mean by rancidity of fats and oils?

(iv) Why neutral sulphite semichemical process is mostly used in paper industry.

(v) Explain NH_3 as nitrogenous fertilizer.

(vi) What are fertilizers? Why are they needed.

(vii) Why the oxyacids of chlorine are stronger than oxyacids of bromine?

(viii) Why Hydrogen fluoride cannot be stored in glass containers?

(ix) Complete the following reactions. (a) $CaOCl_2 + H_2SO_4 \xrightarrow[\text{excess}]{} ?$ (b) $CaOCl_2 + 2HCl \longrightarrow ?$

SECTION ———— II

Note: Attempt any three questions from the following. (8 x 3 = 24)

5. (a) Why hydrogen cannot be placed above alkali metals and halogens?
   (b) Discuss the functions of calcium in plant growth?
6. (a) Describe the Bessemer's process for the manufacture of steel.
   (b) What do you know about water pollution? How is water polluted by industrial effluents?
7. (a) What is cracking? Explain its three types.
   (b) Define sulphonation of benzene. Write its mechanism.
8. (a) Write down four methods of preparation of Alkane. Two from alkyl halides and two from carbonyl compounds i.e. (aldehyde and ketone)
   (b) How will you convert? (i) Methanol into ethanol (ii) Acetone into ethyl alcohol.
9. (a) Explain S_N2 mechanism in detail write 8(eight) points.
   (b) Describe Mechanism for (i) Cannizzaro's reaction (ii) Aldehyde with NH_2-OH

1218 Warning.- Please write your Roll No. in the space provided and sign. Roll No----------
(Inter Part – II) (Session 2016-17 & 2016-18) Sig. of Student ----------

Chemistry (Objective) **Group – II** **Paper (II)**

Time Allowed:- 20 minutes **PAPER CODE 4488** Maximum 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

1) Which Enzyme is not involved in fermentation of starch?

(A) Diastase (B) Zymase (C) Urease (D) Maltase

2) Formaline is a solution of ..... formaldehyde in water

(A) 10 % (B) 20 % (C) 40 % (D) 60 %

3) The solution of which acid is used for seasoning of food?

(A) Formic acid (B) Acetic acid (C) Benzoic acid (D) Butanoic acid

4) Which one of the following Enzymes brings about the Hydrolysis of fats?

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

5) Peroxyacetylnitrate (PAN) is an irritant to human beings and it affects.

(A) Eyes (B) Ears (C) Nose (D) Stomach

6) The main pollutant of leather tanneries in the waste water is due to the salt of

(A) Lead (B) Chromium (vi) (C) Copper (D) Chromium (iii)

7) For which crop, Ammonium nitrate fertilizer is not used?

(A) Cotton (B) Wheat (C) Sugarcane (D) Paddy rice

8) Zinc oxide is

(A) Acidic (B) Basic (C) Neutral (D) Amphoteric

9) Which one of the following does not belong to alkaline Earth metals?

(A) Be (B) Ra (C) Ba (D) Rn

10) Which element forms an ion with charge +3

(A) Beryllium (B) Aluminium (C) Carbon (D) Silicon

11) Laughing gas is chemically

(A) NO (B) N_2O (C) NO_2 (D) N_2O_4

12) Hydrogen bond is the strongest b/w the molecules of

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

13) Which of the following is a typical transition metal?

(A) Sc (B) Y (C) Ra (D) Co

14) Linear shape is associated with which set of hybrid orbitals?

(A) sp^3 (B) sp^2 (C) sp (D) dsp^2

15) Formula of chloroform is

(A) CH_3Cl (B) $CHCl_3$ (C) CH_2Cl_2 (D) CCl_4

16) Amongst the following, the compound that can be the most readily sulphonated is

(A) Toluene (B) Benzene (C) Nitrobenzene (D) Chlorobenzene

17) Which one of the following is not a nucleophile.

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

Warning:- Please, do not write anything on this question paper except your Roll No.

1218 (Inter Part - II) (Session 2015-17 & 2016-18)

Chemistry (Subjective) **Group (II)** **Paper (II)**

Time Allowed: 2.40 hours Maximum Marks: 68

Section ---------- I

2. Answer briefly any Eight parts from the followings:- 8 × 2 = 16

(i) Why size of an anion is always greater to that of its parent atom?
(ii) Hydration energy decreases in the group from top to bottom, why?
(iii) How Gypsum can be converted to plaster of paris?
(iv) Write reactions for (a) Boarax is heated with CoO. (b) Al_2O_3 is heated with NaOH solution.
(v) What is sodium silicate; how it can be prepared?
(vi) Write chemical formulae for the following minerals. (a) Cryolite (b) Colemanite
(vii) Write two points to show peculiar behaviour of Carbon from its group members.
(viii) P_2O_5 is a powerful dehydrating agent. Prove it by giving two examples.
(ix) Give the reactions of contact process for the manufacture of Sulphuric acid.
(x) Write down any four points of dissimilarities between oxygen and sulphur.
(xi) Write role of chlorofluoro carbons (*CFCs*) in destroying ozone.
(xii) Differentiate between primary and secondary pollutant with examples.

3. Answer briefly any Eight parts from the followings:- 8 × 2 = 16

(i) What is d – d transition? (ii) What is Wurtz – fittig reaction?
(iii) Compare cast iron, wrought iron and steel with reference to percentage of carbon?
(iv) Distinguish ethene from ethyne by a chemical reaction.
(v) Define polymerization. How high quality polyethylene is prepared?
(vi) What is excellent method for the preparation of alkyl iodides? Give an example.
(vii) Define the following terms (a) Phenols (b) Oxonium ion
(viii) Why phenol is acidic in nature but benzene is not acidic in nature?
(ix) Prepare each of following compounds from acetaldehyde (a) Lactic Acid (b) Acetic Acid.
(x) Give general mechanism of base catalyzed addition reaction.
(xi) What are fatty acids? Give an example. (xii) What are α – Aminoacids? Give their importance.

4. Answer briefly any Six parts from the followings:- 6 × 2 = 12

(i) What is difference between glucose and fructose?
(ii) What are thermoplastic polymers? Give an example?
(iii) What are derived proteins? Give two examples.
(iv) Name principal methods for chemical pulping used for production of paper?
(v) Define micro nutrients with examples? (vi) What are the requirements of a fertilizer?
(vii) Write down names and formulae of four oxyacids of Chlorine?
(viii) Give two uses of bromine. (xi) Give four applications of noble gases?

Section ---------- II

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

5. (a) State Mendeleev's periodic Law. What are the improvements made in the Mendeleev's periodic table?
   (b) Mension the properties of Beryllium in which it does not resemble with its own family.
6. (a) Describe the Bessmer's process for the manufacture of steel.
   (b) Describe the hydrosphere and lithosphere of environment.
7. (a) What are homocyclic and heterocyclic compounds? Give one example of each.
   (b) Draw the structural formulae for the following compounds. (i) m-chlorobenzoic acid. (ii) P-nitroaniline (iii) 2-amino-5-bromo-3-nitro-benzene sulphonic acid. (iv) m-Nitrophenol
8. (a) How phenol reacts with (i) H_2SO_4 (ii) Hydrogen. How C_2H_5OH reacts with (i) $CH_3 - Mg - I$ (ii) $SOCl_2$
   (b) Prepare Alkanes from (i) Carbonyl compounds (aldehydes & ketones) (ii) Grignards reagent (iii) Alkyl halide
9. (a) Write reactions of ethyl magnesium bromide followed by acid hydrolysis with following compounds. (i) HCHO (ii) CH_3CHO (iii) $(CH_3)_2CO$ (iv) CO_2
   (b) Describe with mechanism aldol condensation. Why does formaldehyde not give this reaction?