Roll No._____ to be filled in by the candidate.

(NEW PATTERN)

Paper Code	8	4	8	1

Sessions: 2012-2014 & 2013-2015

Chemistry (Objective Type)

Time: 20 Minutes **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. Which one is an incomplete period?

(A) 4th **(B)** 5th **(C)** 6th **(D)** 7th

2. The Oxides of Beryllium are:

(A) acidic **(B)** basic **(C)** amphoteric **(D)** azeotropic

3. Which metal is used in thermite process because of its activity?

(A) Iron **(B)** Aluminium **(C)** Copper **(D)** Zinc

4. The most electronegative element of group V-A is:

(A) N **(B)** P **(C)** Sb **(D)** Bi

5. Alpha decay of the Radium gives:

(A) Neon **(B)** Argon **(C)** Xenon **(D)** Radon

6. Which of the following is a typical transition metal?

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

7. Which one is the heterocyclic compound of oxygen?

(A) Pyrridine **(B)** Pyrrole **(C)** Furan **(D)** Thiophene

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)** Ethyne **(C)** Ethene **(D)** Ethane

10. Which one of the following is not a nucleophile?

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

11. Which one is a dihydric alcohol?

(A) Ethanol **(B)** Cyclohexanol **(C)** Glycerol **(D)** Glycol

12. Which of the following will react with both aldehydes and ketones?

(A) Grignard's reagent **(B)** Tollen's reagent **(C)** Fehling's reagent **(D)** Benedict's reagent

13. Ketones are prepared by the oxidation of:

(A) Primary alcohol **(B)** Secondary alcohol **(C)** Tertiary alcohol **(D)** Quarternary alcohol

14. Which of the following is not a fatty acid?

(A) Propanoic acid **(B)** acetic acid **(C)** Phthalic acid **(D)** Butanoic acid

15. Which one is a disaccharide?

(A) Glucose **(B)** Sucrose **(C)** Fructose **(D)** Cellulose

16. Ammonium nitrate fertilizer is not used for which crop?

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

17. Which are carcinogenic class of compounds?

(A) Dioxins **(B)** Lower alkanes **(C)** Fatty acids **(D)** Proteins

Roll No._____ اُمیدوار خود پُر کرے

(NEW PATTERN)

Subject Code	6	0	4	8

Sessions: 2012-2014 & 2013-2015

Chemistry (Essay Type)

Time: 3:10 Hours **Marks: 83**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Give two simmilarities and two differences of hydrogen with IA group elements.
ii. Why diamond is bad conductor of electricity but graphite is good conductor of electricity?
iii. Define each with one example (a) Primary alkyl halide (b) Secondary alkyl halide.
iv. Give reactions of ethyl bromide with (a) CH_3COONa (b) Zn+HBr
v. Give names of any four steps involved in neutral sulphite semi chemical process.
vi. Write down reactions involved in first 24 hours during setting of cement.
vii. What is action of heat on orthophosphoric acid?
viii. Give reactions of P_2O_5 with (a) HNO_3 (b) C_2H_5OH
ix. Convert acetic acid into acetone.
x. Define with examples (a) Tautomerism (b) cracking of petroleum.
xi. How amino acid is synthesized? Give one method.
xii. What is vital force theory? Who rejected this theory and how?

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. What are Clemmensen and Wolf Kishner's reduction reactions? How they differ?
ii. What is difference between conjugated protein and derived protein?
iii. When double bond and triple bonds are present in a compound, how are they named?
iv. What are primary and secondary pollutants? Give examples.
v. Write four uses of bleaching powder.
vi. What is saponification number?
vii. How Gypsum is converted into plaster of Paris?
viii. What do you know about available chlorine?
ix. How wood spirit is prepared from water gas?
x. Write down the structure of (a) Lactic acid (b) Tartaric acid.
xi. What is biochemical oxygen demand?
xii. How lime mortar is prepared?

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. Give the structures and names of two condensed ring aromatic hydrocarbons.
ii. Give four uses of acetaldehyde.
iii. How will you distinguish between aldehydes and ketones?
iv. Why CO_2 is acidic in character?
v. What happens when borax is treated with H_2SO_4?
vi. What are interstitial compounds?
vii. Give the uses of $K_2Cr_2O_7$.
viii. What is Wurtz-Fitting reaction?
ix. What is haloform reaction?

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5. (a) Explain the construction of Down's cell. Give reactions taking place at cathode and anode. 4
   (b) How will you synthesize the following compounds starting from Ethyne. 4
   (i) Acetaldehyde (ii) Methylnitrile (iii) Ethane (iv) Acrylonitrile.
6. (a) Why is CO_2 a gas at room temperature while SiO_2 is a solid? Explain. 4
   (b) What are aromatic hydrocarbons? How are they classified? 4
7. (a) Give four reactions of H_2SO_4 as an acid. 4
   (b) Write a note on SN1- reaction of alkyl halides. 4
8. (a) What are the commercial uses of hologens and their compunds? 4
   (b) How does phenol react with (i) HNO_3 (ii) H_2SO_4 (iii) H_2/Ni (vi) NaOH 4
9. (a) Define atomic orbital hybridization. Explain the structure of ethylene on the basis of hybridization. 4
   (b) What is cannizaro's reaction? Explain with mechanism. 4

Section -III (Practical Section)

NOTE: Answer any three parts from the following. **5x3=15**

10. A. Write down the qualitative analysis of 'Zn^{+2}' radical in a systematic manner. 05
    B. Write the qualitative analysis of 'Na^{+1}' radical in a systematic manner. 05
    C. (i) Write the qualitative analysis of 'Cl^{-1}' radical in a systematic manner. (ii) How 'Palm test' is performed? 1+4=05
    D. How will you detect 'N' and 'S' in an organic compound? 05
    E. Write the material required, equation and procedure for the preparation of 'Iodoform'. 05

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Inter. (Part-II)-A-2015

Roll No._____ to be filled in by the candidate.

(OLD PATTERN)

Session:2011-2013

Paper Code	4	4	8	1

Chemistry (Objective Type)

Time: 20 Minutes **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. The elements placed at the extreme left of the periodic table are:

(A) Metals **(B)** Non-metals **(C)** Metalloids **(D)** Transition elements

2. Chemical formula of milk of magnesia is:

(A) $MgCO_3$ **(B)** $MgSO_4$ **(C)** $Mg(OH)_2$ **(D)** MgO

3. The hydrolysis of borax can be prevented in presence of:

(A) ethanol **(B)** glucose **(C)** glycerine **(D)** vinegar

4. The catalyst used in manufacturing H_2SO_4 by contact process is:

(A) V_2O_5 **(B)** Fe_2O_3 **(C)** Ni **(D)** Pt

5. The anhydrous form of $HClO_4$ is:

(A) ClO_3 **(B)** ClO_2 **(C)** Cl_2O_5 **(D)** Cl_2O_7

6. Which of following is non-typical transition metal:

(A) Cr **(B)** Mn **(C)** Zn **(D)** Fe

7. Which of the following is a heterocyclic compound?

(A) Naphthalene **(B)** Anthracene **(C)** Pyridine **(D)** Nitrobenzene

8. Which type of reactions are given by alkanes?

(A) Polymerization **(B)** Elimination **(C)** Addition **(D)** Substitution

9. During nitration of benzene the active nitrating agent is:

(A) NO_3 **(B)** NO_2^+ **(C)** NO_2^- **(D)** HNO_3

10. Ethyl chloride reacts with alcoholic KOH to give:

(A) C_2H_4 **(B)** C_2H_5OH **(C)** C_2H_6 **(D)** C_2H_4O

11. According to Lewis concept ethers behave as:

(A) acid **(B)** base **(C)** acid as well as base **(D)** none of these

12. Cannizaro's reaction is:

(A) oxidation reaction **(B)** reduction reaction **(C)** acid-base reaction **(D)** Both A and B

13. Which of the following reagents will react with both aldehydes and ketones?

(A) Grignard's reagent **(B)** Tollen's reagent **(C)** Fehling's reagent **(D)** Benedict's reagent

14. Organic compounds having fruity smell are:

(A) Carboxylic acids **(B)** Esters **(C)** Alcohols **(D)** Ethers

15. Which is not polymer:

(A) Glucose **(B)** Starch **(C)** Protein **(D)** Nylon

16. Urea contains Nitrogen.

(A) 80% **(B)** 46% **(C)** 60% **(D)** 90%

17. Fungicides are the pesticides which:

(A) control the growth of fungus **(B)** kill insects

(C) kill plants **(D)** kill herbs

Roll No._____ (To be filled in by the candidate)

Chemistry (Essay Type)

(OLD PATTERN)

Session: 2011-2013

Subject Code	4	4	8

Time: 2:40 Hours

Marks: 68

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. How the families in periodic table are used for quick recognition of an element?
ii. Give two reactions in which sulphuric acid acts as oxidizing agent.
iii. What are polymeric halides? Give an example.
iv. Write the actions of an acid (HCl) and a base (NaOH) on Be.
v. Write down the advantages of Nelson cell.
vi. What happens when Li_2CO_3 and LiOH are strongly heated?
vii. How phosphorous can make five covalent bonds?
viii. How NO(Nitric Oxide) reacts with (a) Cl_2 (b) $FeSO_4$?
ix. What is Freon gas? Give its application.
x. Explain the d-d transition of electron in transition metals.
xi. What is Markownikov's rule? Explain it with an example.
xii. What is hydrogenolysis? Give an example.

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. What happens when the following compounds are heated (a) Calcium acetate (b) Ammonium acetate?
ii. How Phenol reacts with dil HNO_3 at room temperature?
iii. Give four uses of Borax.
iv. Write the names and formulas of four oxyacids of boron.
v. What is petroleum? Give its origin.
vi. What are hetrocyclic compounds? Give two examples.
vii. Give two methods for the preparation of benzene.
viii. Give the mechanism of acylation of benzene.
ix. Define (a) SN1 reactions (b) SN2 reactions.
x. What are the monohaloalkanes? How are they classified?
xi. How the hydrolysis of esters gives carboxylic acids?
xii. How alcohols can be obtained by the hydration of alkenes?

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. Write the labratary method for the preperation of formaldehyde.
ii. What is Benadict's solution? Give its application with chemical equation.
iii. Define fertilizer, write three essential qualities of a good fertilizer.
iv. Describe the process of digestion in pulp preparation.
v. How leather tanneries pollute the water? How can be prevented from their toxic effect?
vi. Write down the four uses of acetaldehyde.
vii. Define the (a) Saponification number (b) Acid number.
viii. Starch is not pure compound. Justify the statement.
ix. How the oxidation is carried out in ethanol and 2-butanone?

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5. **(a)** What is ionization energy and which factors affect it? How ionization energy vary in groups and periods? **4**
   (b) Write four differences of lithium from its own family members. **4**
6. **(a)** Explain the cis-trans Isomerism with two examples. **4**
   (b) Write down the four uses of acetaldehyde. **4**
7. **(a)** How does ethene react with: (i) alkaline $KMnO_4$ solution (ii) Cold Conc. H_2SO_4. **4**
   (b) What happens when ethyl magnesium bromide is treated with CH_3CHO and CH_3COCH_3 followed by acid hydrolysis? **4**
8. **(a)** Describe the mechanism of Friedal Craft's Alkylation of Benzene? **4**
   (b) What are amino acids? Describe the acidic and basic characters of amino acids by giving one example in each case. **4**
9. **(a)** Give two methods of preparation for each (i) $K_2Cr_2O_7$ (ii) $KMnO_4$. **4**
   (b) What is Smog? Explain the pollutants which are the main cause of photochemical Smog. **4**

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Roll No._____ to be filled in by the candidate.

Paper Code	8	4	8	7

Chemistry (Objective Type)

Sessions: 2012-2014, 2013-2015 & 2014-2016

Time: 20 Minutes **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. Ethanol can be converted into ethanoic acid by:

(A) hydrogenation **(B)** hydration **(C)** oxidation **(D)** fermentation

2. Which reaction is disproportionate reaction?

(A) aldol condensation **(B)** Cannizzaro's reaction **(C)** haloform reaction **(D)** acid catalysed reaction

3. Which test is called silver mirror test?

(A) Tollen's test **(B)** Fehling's test **(C)** Benedict's test **(D)** Sodium nitro prusside test

4. Which of the following is not a fatty acid?

(A) Propanoic acid **(B)** Acetic acid **(C)** Phthalic acid **(D)** Butanoic acid

5. Which of the following is mono-saccharide:

(A) Fructose **(B)** Sucrose **(C)** Starch **(D)** Cellulose

6. 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

7. Ecosystem is a smaller unit of:

(A) lithosphere **(B)** hydrosphere **(C)** atmosphere **(D)** biosphere

8. Which is the longest period of periodic table?

(A) 4 **(B)** 5 **(C)** 6 **(D)** 7

9. The word alkali is derived from which language?

(A) Arabic **(B)** Greek **(C)** French **(D)** German

10. Which of the following is non metal?

(A) B **(B)** Al **(C)** Ga **(D)** In

11. Which of the element gives acidic oxide?

(A) N **(B)** As **(C)** Sb **(D)** Bi

12. Which one of halogens is a liquid?

(A) F_2 **(B)** Cl_2 **(C)** Br_2 **(D)** I_2

13. Total number of d-block elements are:

(A) 10 **(B)** 20 **(C)** 30 **(D)** 40

14. A double bond consists of:

(A) two sigma bonds **(B)** one sigma and one $\pi - bond$

(C) one sigma and two $\pi - bonds$ **(D)** two $\pi - bonds$

15. Formula of Marsh gas is:

(A) CH_4 **(B)** C_2H_6 **(C)** C_3H_8 **(D)** C_4H_{10}

16. Benzene cannot undergo:

(A) substitution reactions **(B)** addition reactions **(C)** oxidation reactions **(D)** elimination reactions

17. For which mechanisms, the first step 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

Roll No._____ اُمیدوار خود پُر کرے

Subject Code	6	0	4	8

Chemistry (Essay Type)

Sessions: 2012-2014, 2013-2015 & 2014-2016

Time: 3:10 Hours **Marks: 83**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Why the second value of electron affinity of element is usually shown with positive sign?
ii. Ionization energy of Al^{3+} is greater than Mg^{2+}. Give the reason.
iii. Define Aqua Regia. How does it dissolve gold?
iv. Why SO_3 gas is dissolved in H_2SO_4 but not in H_2O in contact process?
v. Write down the main factors on which reactivity of Alkyl halides depends.
vi. Write various types of raw material used in the preparation of cement.
vii. What is vital force theory? How was it rejected?
viii. Define catenation.
ix. Define electrophile and nucleophile.
x. What are the essential and non-essential amino acids?
xi. What is Zwitter ion? Write down its structural formula.
xii. How lignin is removed from paper?

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Why lime water turns milky on passing CO_2 but becomes clear with excess of CO_2?
ii. Name the factors on which oxidizing power of halogens depends.
iii. Write down mechanism for the Kolbe's electrolytic method for the preparation of Alkane.
iv. How is oil spillage affecting the marine life?
v. What is lime mortar? How is it prepared?
vi. Write four uses of noble gases.
vii. Convert Acetylene into (a) Acetaldehyde (b) Benzene
viii. How ethers are prepared by Williamsons synthesis?
ix. Why is phenol much more acidic than alcohols?
x. What are thermoplastic and thermosetting polymers?
xi. Differentiate between oils and fats.
xii. Explain the term BOD.

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. Why the d-block and f-block elements are called transition elements?
ii. What is resonace? Draw two resonance structures of benzene.
iii. Which products are formed by the catalytic reduction of aldehydes? Give one example.
iv. What is Benedict's solution test? Also give its reaction with acetaldehyde?
v. Write four uses of borax.
vi. Why white lead is not suitable for use as a good pigment?
vii. Write two uses of $K_2Cr_2O_7$.
viii. Benzene is less reactive than alkene. Why?
ix. How formaldehyde is prepared on industrial scale?

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5. **(a)** Explain the preparation of sodium metal by Down's cell. **4**
   (b) Explain the acidic behaviour of Ethyne. **4**
6. **(a)** (i) How will you convert boric acid into borax and vice versa? **4**
   (ii) Explain that aqueous solution of borax is alkaline in nature. **4**
   (b) Predict the major products of bromination of following compounds alongwith reaction conditions.
   (i) Nitrobenzene (ii) Benzaldehyde (iii) Bromobenzene (iv) Phenol
7. **(a)** How sulphuric acid is manufactured by contact process on industrial scale? **4**
   (b) Discuss two main factors which govern reactivity of alkyl halides. **4**
8. **(a)** Give eight uses of noble gases. **4**
   (b) Prepare ethyl acetate, ethanal, ethane and diethyl ether from ethanol. **4**
9. **(a)** Explain the term reforming of petroleum. **4**
   (b) Explain the mechanism of reaction of phenylhydrazine with Acetone. **4**

Section -III (Practical Section)

NOTE: Answer any three parts from the following. **5x3=15**

10. **A.** Write the qualitative analysis of basic radical Cd^{2+} in systematic manner. **05**
    B. Write the qualitative analysis of basic radical Sr^{2+} in systematic manner. **05**
    C. (i) Write the qualitative analysis of acid radical CH_3COO^{1-} in systematic manner. **04**
    (ii) Describe "Chromyl Chloride" test. **01**
    D. How will you identify carboxylic functional group in an organic compound? **05**
    E. Write down material required, chemical equation and procedure for preparation of "Phenyl-Glucosazone". **05**

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Roll No._____ to be filled in by the candidate.

Inter. (Part-II)-A-2017

Paper Code	4	4	8	1

Chemistry (Objective Type)

Session; 2015-2017

Group-1

Time: 20 Minutes

Marks: 17

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. Keeping in view the size of atoms,which order is correct one?

(A) Mg > Sr **(B)** Ba>Mg **(C)** Lu>Ce **(D)** Cl>I

2. Which ion will have maximum value of heat of hydration?

(A) Na^{+1} **(B)** Cs^{+} **(C)** Ba^{+2} **(D)** Mg^{+2}

3. Which element among the following belongs to group IVA of periodic table?

(A) Barium **(B)** Iodine **(C)** Tin **(D)** Oxygen

4. The oxidation of NO in air produces:

(A) N_2O **(B)** N_2O_3 **(C)** N_2O_4 **(D)** N_2O_5

5. Which halogen will react spontaneously with Au(s) to produce Au^{3+}?

(A) Br_2 **(B)** F_2 **(C)** I_2 **(D)** Cl_2

6. Which of the following is a typical transition metal?

(A) Sc **(B)** Y **(C)** Fe **(D)** Ra

7. In t-butyl alcohol, the tertiary carbon atom is bonded to:

(A) two hydrogen atoms **(B)** three hydrogen atoms **(C)** one hydrogen atom **(D)** no hydrogen atom

8. The presence of double bond in a compound is sign of:

(A) Saturation **(B)** Unsaturation **(C)** Substitution **(D)** Alkylation

9. Which of the following acid can be used as a catalyst in Friedal-craft reactions?

(A) HNO_3 **(B)** $AlCl_3$ **(C)** $BeCl_2$ **(D)** BCl_3

10. SN_2 reactions can be best carried out with:

(A) Primary alkyl Halide **(B)** Secondary alkyl Halide **(C)** Tertiary alkyl Halide **(D)** Vicinal dihalide

11. Which compound shows maximum hydrogen bonding with water?

(A) CH_3OH **(B)** C_2H_5OH **(C)** CH_3-O-CH_3 **(D)** C_6H_5OH

12. Ketones are prepared by oxidation of:

(A) primary alcohol **(B)** secondary alcohol **(C)** tertiary alcohol **(D)** phenol

13. Which acid is used in manufacture of synthetic fiber?

(A) formic acid **(B)** oxalic acid **(C)** acetic acid **(D)** succinic acid

14. Which of the following is not a fatty acid?

(A) propanoic acid **(B)** acetic acid **(C)** phthalic acid **(D)** butanoic acid

15. A polymeric substance that is formed in the liquid state and then hardened to a rigid solid is called a:

(A) fiber **(B)** varnish **(C)** plastic **(D)** polyamide resin

16. Phosphorous helps the growth of:

(A) Root **(B)** leaf **(C)** Seed **(D)** Stem

17. To avoid the formation of toxic compounds with chlorine which substance is used for disinfecting water:

(A) $KMnO_4$ **(B)** chloramines **(C)** O_3 **(D)** Alums

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Inter (Part-II)-A-2017

Roll No._____ اُمیدوار خود پُر کرے

Chemistry (Essay Type)

Session; 2015-2017
Group-1

Time: 2:40 Hours **Marks: 68**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. What is Lanthanide contraction ?
ii. Why lime is added to an acidic soil ?
iii. Write the formulas of (a) Phosphorite (b) Chile saltpeter.
iv. How do the Leather Tanneries pollute water?
v. What is the action of an aqueous solution of Borax on litmus?
vi. How H_3BO_3 can be prepared from Borax?
vii. P_2O_5 is a powerful dehydrating agent. Give two equations.
viii. How aqua regia reacts with gold? Give equation.
ix. What is smog? What conditions are required for its formation?
x. What is co-ordination sphere? Give an example.
xi. Why the oxidation states vary in a period but remain almost constant in a group?
xii. What is meant by typical and non-typical transition elements? Give one example in each case.

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. What is iodized salt? Write its use.
ii. What are the conditions for cis and Trans isomerism?
iii. Write two identification tests of akenes.
iv. How are alkanes produced by Wurtz's synthesis?
v. What happens when hydrogen iodide is added to ethers?
vi. What are the essential conditions for fermentation?
vii. How do you justify that 150.5 KJ/mole is the resonance energy of benzene?
viii. How is benzene converted into Toluene and nitrobenzene?
ix. How does the bond energy of C-X bond affect the reactivity of alkyl halides?
x. Write the reaction of bleaching powder with ammonia and carbondioxide.
xi. Write the structural formula of neopentane and 3-Ethylpentane.
xii. What are carbocyclic compounds? Write one example.

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. Justify that aldehydes with no α hydrogen give Cannizzaro reaction.
ii. Write only name of the factors which affect the activity of enzymes.
iii. What is the difference between essential and non-essential Amino acids?
iv. What is Ninhydrin Test?
v. Why Tollen's test is called as Silver Mirror Test?
vi. Write reaction involved in formation of Nylon6,6.
vii. What do you mean by denaturation of protein?
viii. Define clinker? How is it converted to cement?
ix. What is the role of K(potassium) in growth of plant?

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5. **(a)** Define hydrides? Discuss ionic hydrides in detail. **4+4=8**
(b) Discuss the peculiar behaviour of Beryllium.

6. **(a)** Describe the rules for naming coordination complexes? **4+4=8**
(b) Explain the process of incineration of industrial waste?

7. **(a)** Discuss the four types of structural isomerism. **4+4=8**
(b) Write a detailed note on S_N^1 mechanism.

8. **(a)** How will you convert ethyne to (i). Ethane (ii). Acetaldehyde (iii). Divinyl acetylene (iv). Glyoxal **4+4=8**
(b) Explain the mechanism of Aldol condensation reaction in detail.

9. **(a)** Describe the structure of Benzene on the basis of atomic orbital treatment. **4+4=8**
(b) How will you convert (i). Methanol into Ethanol (ii). Ethanol into Methanol.

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Roll No._____ to be filled in by the candidate.

Paper Code	4	4	8	2

Session; 2015-2017

Chemistry (Objective Type)

Group-II

Time: 20 Minutes **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given. Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. The correct statement is :

(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.

2. In the Down's Cell, $CaCl_2$ is added to NaCl to:

(A) Increase the solubility **(B)** Increase the dissociation

(C) Increase conductivity **(D)** lower its melting point

3. The solution of the acid used for seasoning of food is:

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

4. The benzene molecule contains

(A) Three double bonds **(B)** Two double bonds **(C)** One double bond **(D)** Delocalized π electron charge

5. For which mechanism, 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

6. Hydrogen bond is the strongest between the molecules of

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

7. A single chloride free radical can destroy how many ozone molecules?

(A) 100 **(B)** 100000 **(C)** 10000 **(D)** 10

8. Laughing gas is chemically

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

9. Linear shape is associated with which type of hybridization.

(A) Sp **(B)** Sp^2 **(C)** Sp^3 **(D)** dsp^2

10. Cannizzaro's reaction is not given by

(A) Formaldehyde **(B)** Acetaldehyde **(C)** Benzaldehyde **(D)** Trimethylacetaldehyde

11. Synthetic rubber is made by polymerization of

(A) Chloroform **(B)** Chloroprene **(C)** Acetylene **(D)** Divinyl acetylene

12. Tincal is a mineral of

(A) Al **(B)** B **(C)** Si **(D)** C

13. Which one of these polymers is an addition polymer?

(A) Nylon-6,6 **(B)** Polystyrene **(C)** Terylene **(D)** Epoxy resin

14. Which one is a non-typical transition element?

(A) Cr **(B)** Mn **(C)** Zn **(D)** Fe

15. Methyl Alcohol is not used

(A) As a solvent **(B)** As an antifreezing agent

(C) As a substitute for petrol **(D)** For denaturing of ethyl alcohol

16. How many zones through which charge passes in a rotary kiln?

(A) 04 **(B)** 03 **(C)** 02 **(D)** 05

17. Which of the following is not a fatty acid?

(A) Propanoic acid **(B)** Acetic acid

(C) Phthalic acid **(D)** Butanoic acid

3 C

Roll No._____ اُمیدوار خود پُر کرے

Chemistry (Essay Type)

Session; 2015-2017

Group-II

Time: 2:40 Hours **Marks: 68**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. CO_2 is gas at room temperature but SiO_2 is solid. Give reason.
ii. The oxidation states vary in a period but remain almost constant in a group. Why?
iii. What is effect of heat on orthoboric acid? Write chemical equations..
iv. How gypsom is converted into plaster of paris? Write chemical equation also.
v. Justify that ZnO is amphoteric in nature.
vi. Alkali metals are strong reducing agents. Give reason
vii. What is recycling of raw materials?
viii. How does P_2O_3 react with water in cold and hot states?
ix. What are transition metals? Why are they so called?
x. What is Biosphere
xi. What is Chromyl chloride test? Write chemical equation also.
xii. Show with two reactions that H_2SO_4 is strong dehydrating agent?

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. What is function of iodized salt?
ii. How does ethyne react with ammonical silver nitrate?
iii. Give any two uses of helium.
iv. What is meant by heterocyclic compounds? Give two examples.
v. How vital force theory was rejected by Wohler?
vi. Give the mechanism of bromination of ethene.
vii. What is meant by denaturing of Ethyl alcohol?
viii. How is diethyl ether prepared by Williamson's synthesis?
ix. How benzene can be prepared from sodium benzoate and phenol?
x. What are two main classes of polycyclic aromatic hydrocarbons? Give one example of each.
xi. Give two chemical reactions to prepare ethyl chloride from ethyl alcohol.
xii Why does SN_2 mechanism give a product with inversion of configuration? Show with one reaction.

Section - II

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. Give mechanism of addition of HCN to acetaldehyde .
ii. Give two remarkable properties of enzymes.
iii. How will you distinguish between acetaldehyde and benzaldehyde?
iv. In what way fats and oils are different?
v. What is vinegar? How is it prepared from ethanol?
vi. What are fatty acids? Give one example.
vii. Define cement. Give essential constituents of cement.
viii. What are fertilizers? Why are they needed?
ix. Define the given terms: (i). Acid number (ii). Iodine number

Section - III

NOTE: Answer any three questions from the following. **8x3=24**

5. **(a)** What are periods? Discusss various periods of the Periodic Table. **1+3**
   (b) Describe with diagram the manufacture of sodium by Down's cell. Also write its electrode reactions. **1+2+1**
6. **(a)** Describe with diagram the manufacture of steel by Bessemer's process. **4**
   (b) How is water purified by (i). Aeration (ii). Coagulation **2+2=4**
7. **(a)** Explain classification of organic compounds on the basis of carbon skeleton. **4+4=8**
   (b) Explain SN_2 mechanism in detail.
8. **(a)** Make the following changes. (i). ethyne into chloroprene (ii). ethyne into Benzene **4+4=8**
   (b) Describe laboratory method of preparation of formaldehyde with diagram.
9. **(a)** Describe the structure of Benzene on the basis of atomic orbital treatment. **4+4=8**
   (b) Describe two methods for the preparation of ethyl alcohol on commercial scale.

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Roll No._____ to be filled in by the candidate.

Paper Code	8	4	8	1

Chemistry (Objective Type)

Sessions:2013-2015&2014-2016

Group-I

Time: 20 Minutes **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. Keeping in view the size of atoms.Which order is correct one?

(A) Li>Na **(B)** Ca>Sr **(C)** P>N **(D)** F>Cl

2. The solution that flows out of cathode compartment of Nelson's cell contains NaOH:

(A) 11% **(B)** 13% **(C)** 15% **(D)** 17%

3. The chief ore of Aluminium is:

(A) Na_3AlF_6 **(B)** Al_2O_3 **(C)** $Al_2O_3.H_2O$ **(D)** $Al_2O_3.2H_2O$

4. The oxide of Nitrogen which causes hysterical laughter is:

(A) NO **(B)** N_2O **(C)** N_2O_3 **(D)** N_2O_5

5. Which halogen is used in tooth paste?

(A) F **(B)** Cl **(C)** Br **(D)** I

6. Which of the following metals is typical transition metal?

(A) Mg **(B)** Zn **(C)** Fe **(D)** K

7. A saturated hydrocarbon containing five carbon atoms has isomers:

(A) one **(B)** three **(C)** six **(D)** nine

8. Which one is more reactive hydrocarbon?

(A) $H_3C\text{-}CH_3$ **(B)** $H_2C{=}CH_2$ **(C)** $HC \equiv CH$ **(D)** C_6H_6

9. Resonance energy of benzene is:

(A) 50 kJ/mole **(B)** 100 KJ/mole **(C)** 150.5 KJ/mole **(D)** 200 KJ/mole

10. Which of the followings is an electrophile?

(A) H_2O **(B)** OH^- **(C)** NH_3 **(D)** BF_3

11. Rectified spirit contains about_____ethanol:

(A) 95 % **(B)** 105% **(C)** 125% **(D)** 85%

12. Which of the following reagents react with both aldehydes and ketones?

(A) Tollen's Reagent **(B)** Fehling's Reagent **(C)** Grignard's Reagent **(D)** Benedicts Reagent

13. Which of the following Amino acids is neutral in nature?

(A) Lysine **(B)** Glycine **(C)** Histidine **(D)** Aspartic acid

14. Which one of the following enzymes brings about hydrolysis of fats:

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

15. Macro-nutrients are required by plants ranging:

(A) 5-200 g **(B)** 5-300 g **(C)** 5-200 Kg **(D)** 5-200 mg

16. PeroxyacetylnitrateIPAN) is an irritant to human beings and it effects:

(A) eyes **(B)** ears **(C)** stomach **(D)** nose

17. To avoid the formation of toxic compounds with chlorine,which substance is used for disinfection of water?

(A) $KMnO_4$ **(B)** O_3 **(C)** Alums **(D)** Chloramines

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Roll No._____ اُمیدوار خود پُر کرے

Sessions:2013-2015&2014-2016

Chemistry (Essay Type)

Group-I

Time: 3:10 Hours **Marks: 83**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Give two similarities of hydrogen with halogens.
ii. What is hydration energy?
iii. Write chemistry of borax bead test.
iv. What is Teflon?Give its two uses.
v. Write four properties of transition elements.
vi. Why is aqueous solution of Na_2CO_3 alkaline in nature?
vii. Why do silicone lubricants are preferred over organic lubricants?
viii. How gypsum is converted into plaster of paris.Write equation.
ix. HNO_2 acts as an oxidizing and reducing agent.Give one example in each case.
x. Write four points of dissimilarities between oxygen and sulphur.
xi. Write equations for the reaction of Cl_2 with cold and hot NaOH.
xii. Define the terms. **(a)** Ligand **(b)** Co-ordination number.

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Explain cracking of petroleum with suitable example.
ii. Prepare ethylene glycol starting from ethene.
iii. Convert ethane into ethyne.
iv. Convert n-hexane into benzene.
v. Convert acetic acid into propanoic acid.
vi. How will you distinguish between an alcohol and a phenol?
vii. CO is a pollutant.explain.
viii. Explain the term lithosphere.
ix. How octane number of gasoline is improved?Explain with example.
x. What happens when benzene is heated with conc.H_2SO_4 at 250°C.
xi. What products are formed when ethyl magnesium bromide reacts with acetone followed by hydrolysis in the presence of an acid.
xii. Ethyl alcohol is a liquid while methyl chloride is a gas.Explain the statement.

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. How formaline can be prepared?
ii. What are peptides and proteins?
iii. Give any four uses of acetic acid.
iv. Write down classification of macromolecules.
v. What is glycogen?
vi. Define acid number.
vii. What is meant by setting of cement?
viii. Give any four qualities of good fertilizers.
ix. Write equation for preparation of Acetone from calcium acetate.

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5. **(a)** What is electron affinity?Give its variation in the period table. **4**
   (b) Describe the peculiar behaviour of Beryllium. **4**
6. **(a)** Write a note on semiconductors. **4**
   (b) Define disproportionation reaction.Give reactions of Chlorine with cold and hot NaOH. **4**
7. **(a)** Define Hybridization.Explain the structure of ethene with reference with reference to sp^2 hybridization. **4**
   (b) Write four methods for the preparation of Alkyl Halides. **4**
8. **(a)** How will you convert Ethene into: **4**
   (i) Ethyl alcohol **(ii)** Ethylene epoxide **(iii)** Ethyleneglycol **(iv)** Ethylene chlorohydrin
   (b) Explain Aldol condensation along with mechanism. **4**
9. **(a)** Describe the structure of Benzene on the basis of atomic orbital treatment. **4**
   (b) Give the preparation of ethyl alcohol by fermentation of starch. **4**

Section -III (Practical)

NOTE: Answer any three parts from the following. **5x3=15**

10. **A.** Write complete qualitative analysis of Al^{3+} radical in a systematic way. **05**
    B. Write complete qualitative analysis of Ba^{2+} radical in a systematic manner. **05**
    C. Write complete qualitative analysis of Cl^- radical in a systematic manner. **04**
    D. How aldehyde group is identified in an organic compound? **05**
    E. Write material required,equation and procedure for preparation of Iodoform. **05**

Roll No._____ to be filled in by the candidate.

Paper Code	8	4	8	2

Chemistry (Objective Type)

Sessions:2013-2015&2014-2016

Group-II

Time: 20 Minutes **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. Alkali metals give hydrides:

(A) Covalent **(B)** Metallic **(C)** Ionic **(D)** Complex

2. Which of the following sulphates is insoluble in water?

(A) Barium sulphate **(B)** Copper sulphate **(C)** Sodium sulphate **(D)** Iron sulphate

3. Boric acid cannot be used as:

(A) antiseptic **(B)** for washing eyes **(C)** for enamal **(D)** for soda bottles

4. The brown gas formed when metal reduces HNO_3 is :

(A) NO **(B)** NO_2 **(C)** N_2O_3 **(D)** N_2O_5

5. Which of the followings is a typical transition metal:

(A) Co **(B)** Zn **(C)** Sc **(D)** Y

6. The chemist who synthesized urea from ammonium cyanate was:

(A) Dalton **(B)** Kollie **(C)** Boyle **(D)** Wohler

7. One of the following formula of ethyl acetate is:

(A) CH_3COOCH_3 **(B)** CH_3COOH **(C)** $CH_3COOC_2H_5$ **(D)** $C_2H_5COOCH_3$

8. Which compound is most reactive one?

(A) methane **(B)** ethyne **(C)** ethane **(D)** benzene

9. Which of the following will react with Fehling solution?

(A) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$ **(B)** $CH_3-\overset{\overset{O}{\|}}{C}-OC_2H_5$ **(C)** $CH_3-\overset{\overset{O}{\|}}{C}-H$ **(D)** $CH_3-\overset{\overset{O}{\|}}{C}-OH$

10. Which enzyme is involved in fermentation of glucose?

(A) Zymase **(B)** Urease **(C)** Cellulose **(D)** Ptylin

11. Which halogen will react spontaneously with Au(s) to produce Au^{3+}?

(A) I_2 **(B)** Cl_2 **(C)** Br_2 **(D)** F_2

12. Which of the following reagents react with both aldehydes and ketones?

(A) Tollen's reagent **(B)** Fehlings solution **(C)** Benedict solution **(D)** Grignard's reagent

13. The reagent used to reduce carboxylic group to an alcohol is:

(A) $LiAlH_4$ **(B)** $NaBH_4$ **(C)** H_2/Ni **(D)** H_2/Pt

14. Sucrose is composed of two monomer unit is:

(A) glucose+galactose **(B)** fructose+galactose **(C)** glucose+mannose **(D)** glucose+fructose

15. The three elements needed for the healthy growth of plants are:

(A) N,K,C **(B)** N,S,P **(C)** N,K,P **(D)** N,Ca,P

16. In purification of polluted water the coagulent used is:

(A) copper sulphate **(B)** alum **(C)** iron sulphate **(D)** sodium carbonate

17. Ecosystem is a smaller unit of:

(A) biosphere **(B)** atmosphere **(C)** hydrosphere **(D)** lithosphere

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Roll No._____ اُمیدوار خود پُر کرے

Sessions:2013-2015&2014-2016

Chemistry (Essay Type)

Group-II

Time: 3:10 Hours

Marks: 83

Section - I

2- Write short answers of any eight parts from the following. 2 x 8 =16

i. How melting point varies along short periods?
ii. Give any two uses of plaster of Paris.
iii. Write formulas of **(i)** Borax **(ii)** Epsom salt
iv. What are silicates?Give one example.
v. Write down formula and uses of talc.
vi. Give two similarities of oxygen and sulphur.
vii. Write down any two uses of Radon.
viii. Why noble gases are inert.
ix. What are interstitial compounds?
x. Draw geometry of PCl_5.
xi. How many allotropes of phosphorus are known? Write their names.
xii. Ionic radius of negative ion is larger than parent atom.Why?

3- Write short answers of any eight parts from the following. 2 x 8 =16

i. What are alicyclic compounds?
ii. Why 1-Butene does not show Cis-trans isomerism?
iii. How will you convert ethane into methane?
iv. Give four uses of ethene.
v. What are polycyclic aromatic hydrocarbons?
vi. Write the mechanism of Nitration of benzene.
vii. What are electrophiles and nucleophiles?
viii. Convert ethene into 1-Butanol?
ix. How ethanol is denatured?
xi. How acid rain is harmful to our environment?
x. How will you distinguish between 1-propanol and 2-propanol?
xii. Why livestock waste should not be dumped into fresh water sources?

4- Write short answers of any six parts from the following. 2 x 6 =12

i. Explain silver mirror test.
ii. Write two uses of Acetaldehyde.
iii. Write Ninhydrin test.
iv. What is Zwitter ion?Give an example.
v. Write four qualities of a good fertilizer.
vi. What do you mean by iodine number.
vii. Write open chain and cyclic structures of glucose.
viii. What are copolymers?Give one reaction.
ix. Name some woody and non woody raw materials for paper industry.

Section - II

NOTE: Answer any three questions from the following. 8x3=24

5. **(a)** Write improvements in Mendeleev's periodic table. 4
   (b) Write the peculiar behaviour of Beryllium. 4
6. **(a)** Write any two preparations and two chemical reactions of Borax. 4
   (b) How Bleaching powder is prepared by Beckmann's method? 4
7. **(a)** Define cracking of petroleum.Explain its three types. 4
   (b) What is Grignard's reagent?How is it prepared?Give its reactions with NH_3 and C_2H_5OH. 4
8. **(a)** Explain the acidic nature of terminal alkyne. 4
   (b) Describe with mechanism aldol condensation reaction. 4
9. **(a)** How will you convert Benzene into: **(i)** Benzoic acid **(ii)** m-Chloronitrobenzene 4
   (b) How primary,secondary and tertiary alcohols are distinguished by chemical test. 4,

Section -III (Practical)

NOTE: Answer any three parts from the following. 5x3=15

10. A. Write complete qualitative analysis for NO_3^{1-} radical in a systematic manner. 05
    B. Write complete qualitative analysis for Pb^{2+} radical in a systematic manner. 05
    C. Write complete qualitative analysis of NH_4^{+1} radical in a systematic manner. 04
    D. How will you identify and confirm carboxylic group in an organic compound? 05
    E. Write the material required, equation and procedure for the preparation of aspirine. 05

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Roll No._____ to be filled in by the candidate.

Paper Code	4	4	8	5

Sessions; 2015-2017 & 2016-2018

Chemistry (Objective Type)

Time: 20 Minutes **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. The rate of E_1 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 these

2. Which compound is more soluble in water?

(A) C_2H_5OH **(B)** C_6H_5OH **(C)** CH_3COCH_3 **(D)** n-Hexanol

3. Cannizzaro's reaction is not given by:

(A) Formaldehyde **(B)** Acetaldehyde **(C)** Benzaldehyde **(D)** Trimethyl acetaldehyde

4. Which is basic amino acid?

(A) Glycine **(B)** Alanine **(C)** Aspartic acid **(D)** Lysine

5. Which one of the following nitrogeneous bases is not present in RNA?

(A) Cytosine **(B)** Adinine **(C)** Thiamine **(D)** Uracil

6. Micronutrients are required in quantity ranging from:

(A) 4-40 g **(B)** 6-200 g **(C)** 6-200 kg **(D)** 4-40 kg

7. The pH range of acid rain is:

(A) 7-6.5 **(B)** 6-5.6 **(C)** less than 5 **(D)** 6.5-6

8. Which one of the following is a secondary pollutant?

(A) CO **(B)** NO_x **(C)** SO_x **(D)** PAN

9. Which of the following statement is incorrect?

(A) All the metals are good conductor of Heat **(B)** All the metals are good conductor of Electricity

(C) All the metals form positive ion **(D)** All the metals form acidic oxides

10. Which of the following is not an alkali metal?

(A) Francium **(B)** Cesium **(C)** Rubidium **(D)** Radium

11. Tincal is a mineral of

(A) Al **(B)** B **(C)** Si **(D)** C

12. The brown gas formed, when metal reduces HNO_3 to:

(A) N_2O_5 **(B)** N_2O_3 **(C)** NO_2 **(D)** N_2O_4

13. Which halogen occurs naturally in a positive oxidation state?

(A) Fluorine **(B)** Chlorine **(C)** Bromine **(D)** Iodine

14. Which of the following is a non-typical transition element?

(A) Cr **(B)** Mn **(C)** Zn **(D)** Fe

15. Ethers show the phenomenon of:

(A) Position isomerism **(B)** Metamerism **(C)** Cis-trans isomerism **(D)** Functional group isomerism

16. Characteristic reactions of Alkenes are:

(A) Nucleophilic addition **(B)** Electrophilic addition **(C)** Nucleophilic substitution **(D)** Free radical substitution

17. During nitration of benzene, the active nitrating agent is:

(A) NO_3^{-1} **(B)** NO_2^{+} **(C)** NO_2^{-1} **(D)** HNO_3

Roll No._____ اُمیدوار خود پُر کرے

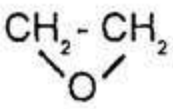
Sessions; 2015-2017 & 2016-2018

Chemistry (Essay Type)

Time: 2:40 Hours **Marks: 68**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Why do the boiling points of halogens increase down the group in periodic table?
ii. Define the following terms: (a) Lanthanide contractions (b) Hydration energy
iii. Justify with chemical reaction that reaction of alkali metal oxide with water is Acid-Base reaction.
iv. Aluminium when burn in oxygen an Intense white light is produced. Explain.
v. Give the chemical reactions of Boric Acid with (a) C_2H_5OH (b) Na_2CO_3
vi. Compare the properties of carbon and silicon. Give four points of difference.
vii. Prepare aqua Regia. How does it dissolve the Noble metal $Au_{(s)}$ and why?
viii. What are the various allotropic forms of Group VIA elements of periodic table?
ix. What are sulphate aerosols? How do they effect the older people?
x. Prepare each of the following compounds from Ethene ($CH_2 = CH_2$). (a) CH_3CH_2OH (b) 
xi. How does P_2O_5 react with water in cold and hot state? xii. What are essential conditions for smog formations?

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Define non-typical transition elements with two examples. ii. How is wood spirit prepared from water gas?
iii. How is acetyl chloride prepared from acetic acid?
iv. Name the following complexes according to IUPAC system. (i) $[Pt(Cl)(NO_2)(NH_3)_4]SO_4$ (ii) $[Fe(CO)_5]$
v. Name the following compounds according to IUPAC system. (i) $(H_3C)_2C=CH-CH_3$
(ii) $(H_3C)_2CH.CH(C_2H_5)(CH_2)_2.CH.(CH_3)_2$
vi. How is trans-2-Butene prepared from an alkyne? Give its chemical reaction.
vii. Write down structural formulae of following compounds: (a) Biphenyl (b) Diphenylmethane
viii. How does KOH react with ethyl bromide in two different ways? Justify your answer with chemical reactions.
ix. Why are lower alcohols more soluble in water than higher alcohols?
x. How is formaldehyde prepared in laboratory ? Give its chemical reaction.
xi. How will you distinguish chemically between methanol and ethanol?
xii. What are fatty acids? Why is this name used ? Give two examples.

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. What are epoxy resins? How are they prepared?
ii. What is meant by denaturation of proteins?
iii. In what ways fats and oils are different?
iv. What are fertilizers? Why are they needed?
v. Define cement. Give its essential components.
vi. What are micronutrients?
vii. Why has iodine metallic luster?
viii. HF is less viscous liquid than water. Why?
ix. What are disproportionation reactions? Give an example.

Section - II

Note : Attempt any three questions from the following.

5. **(a)** What are oxides? Describe their classification on the basis of their acidic and basic behaviour. **4+4=8**
(b) Describe the commercial preparation of sodium by Down's cell with diagram and chemical reactions.
6. **(a)** Explain the following terms giving examples. **4+4=8**
(i) Ligand (ii) Central metal atom (iii) Coordination sphere (iv) Substitutional alloy
(b) What are Lipids? Write two different characteristics of lipids.
7. **(a)** Explain structure of C_2H_4 using idea of hybridization. **4+4=8**
(b) Describe structure of Benzene on the base of Atomic orbital treatment.
8. **(a)** How does ethyne react with: **4+4=8**
(i) Alkaline $KMnO_4$ (ii) 10% H_2SO_4 in the presence of $HgSO_4$ (iii) HBr (iv) NH_3
(b) How is ethyl alcohol prepared from molasses and starch?
9. **(a)** Using ethyl bromide as a starting material, how will you prepare the following compounds? **4+4=8**
(a) n-Butane (b) ethyl alcohol (c) propanoic acid (d) ethene
(b) Define canizzaro's reaction with an example, also give its mechanism.

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Inter. (Part-II)-A-2018

Paper Code	8	4	8	5

*Roll No.*_____ *to be filled in by the candidate.*

Chemistry (Objective Type)

Session: 2014-2016

Time: 20 Minutes

Marks: 17

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. S_N2 reactions are best carried by which alkyl halides?

(A) Primary **(B)** Secondary **(C)** Tertiary **(D)** Quartnary

2. Rectified spirit contains alcohol:

(A) 80 % **(B)** 85 % **(C)** 90 % **(D)** 95 %

3. Cannizaro's reaction is not given by:

(A) Formaldehyde **(B)** Acetaldehyde **(C)** Benzaldehyde **(D)** Trimethyl acetaldehyde

4. Which of these is not a fatty acid?

(A) propionic acid **(B)** acetic acid **(C)** phthalic acid **(D)** butanoic acid

5. Which of these is synthetic polymer:

(A) animal fat **(B)** starch **(C)** cellulose **(D)** polyester

6. Which is not a calcarious material:

(A) lime **(B)** clay **(C)** marble **(D)** marine shells

7. Ecosystem is a smaller unit of:

(A) Lithosphere **(B)** Hydrosphere **(C)** Atmosphere **(D)** Biosphere

8. In purification of potable water the coagullant used is:

(A) Nickel sulphate **(B)** Copper sulphate **(C)** Barium sulphate **(D)** Alum

9. The oxide of which element is basic:

(A) Sodium **(B)** Carbon **(C)** Nitrogen **(D)** Fluorine

10. Chile saltpetre has formula:

(A) KNO_3 **(B)** $NaNO_3$ **(C)** $Na_2B_4O_7$ **(D)** H_3BO_3

11. Formula of orthoboric acid is:

(A) H_3BO_3 **(B)** HBO_2 **(C)** $H_2B_4O_7$ **(D)** $H_6B_4O_9$

12. The catalyst used in contact process is:

(A) Fe_2O_3 **(B)** Al_2O_3 **(C)** Ag_2O **(D)** V_2O_5

13. Which is the strongest acid?

(A) $HClO_4$ **(B)** $HClO_3$ **(C)** $HClO_2$ **(D)** HClO

14. Coordination number of iron in $[Fe(CO)_5]$ is:

(A) 2 **(B)** 3 **(C)** 4 **(D)** 5

15. Trigonal shape is associated with:

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

16. Synthetic rubber is made by the polymerization of:

(A) Chloroform **(B)** Acetylene **(C)** Ethylene **(D)** Chloroprene

17. Which reaction is not given by benzene?

(A) substitution **(B)** elimination **(C)** addition **(D)** oxidation

Roll No._____ اُمیدوار خود پُر کرے

Chemistry (Essay Type)

Session: 2014-2016

Time: 3:10 Hours **Marks: 83**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. What happens when H_2SO_4 reacts with solutions of $Pb(NO_3)_2$ and $Sr(NO_3)_2$?
ii. Why Na^+ has lower value of heat of hydration than that of Li^+?
iii. Write chemical formulas of Carnallite and Alunite.
iv. Name the factors which affect the oxidizing power of Halogens.
v. How do we confirm a copper salt by the Borax Bead Test?
vi. Write two uses of Boric acid.
vii. Write the reactions of HNO_2 with urea and Br_2.
viii. Why diamond does not conduct electricity but graphite does?
ix. How is lime mortor prepared?
x. Give the reaction of Cl_2 gas with hot NaOH.
xi. Why is Fe^{+3} strongly paramagnetic?
xii. What is Chromyl Chloride Test? Write an equation with NaCl?

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Write down structural formulas of two possible isomers of C_4H_{10}.
ii. Why there is no free rotation around a double bond and a free rotation around a single bond?
iii. Write down reactions of ethyl magnesium bromide with (a) HCHO (b) CH_3CHO
iv. What do you know about hydroxylation of ethene?
v. How are Alkyl benzenes oxidized?
vi. What do you know about Wurtz-Fittig's reaction?
vii. Write down catalytic oxidation of methane.
viii. How is Grignard's reagant prepared?
ix. What is Lucas test?
x. What is Dow's method for preparation of phenol?
xi. How is livestock waste polluting water?
xii. Write a brief note on Acid rain.

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. Write two reactions in which carbonyl compounds are identified.
ii. How is Ammonium nitrate (NH_4NO_3) manufactured? Why is it not useful for Peddy rice?
iii. What is peptide bond? Write the difference between polypeptide and protein.
iv. How are amino group and carboxyl group identified in amino acid. Write the name of colouring agent used to visulize the amino acid in paper chromatography.
v. How are the addition polymers formed? Write the steps involved.
vi. What is polyester Resin? Write its role in clothing.
vii. Define Protein. Give its classification.
viii. Write the four uses of formaldehyde.
ix. Discuss the Prilling process in urea industry.

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5. (a) Write about two resemblances and two differences of hydrogen with halogens. **4**

(b) Describe eight points of differences between lithium and its family. **4**

6. (a) What are Silicates? Describe its important uses. **4**

(b) What happens when xenon tetra-fluoride reacts with (i) Hg (ii) NH_3 (iii) F_2 (iv) H_2 **4**

7. (a) What is orbital hybridization? Explain 'sp' mode of hybridization of carbon. **4**

(b) What products are formed when following compounds are treated with ethyl magnesium bromide? **4**
(i) ClCN (ii) CH_3CHO (iii) C_2H_5OH (iv) CO_2

8. (a) Discuss Acidic nature of alkynes in detail. **4**

(b) Write down chemical reaction of acetaldehyde with the following:- **4**
(i) NH_2OH (ii) H_2N-NH_2 (iii) $H_2N-NHC_6H_5$ (iv) C_2H_5OH

9. (a) Write down mechanisms of the following reactions: **4**
(i) Friedel - Crafts alkylation (ii) Nitration of benzene

(b) Write down the action of phenol on the following: **4**
(i). Zn (ii). Br_2 water (iii). Conc. HNO_3 (iv) Conc. H_2SO_4

Section -III (Practical)

NOTE: Answer any three parts from the following. **5x3=15**

10. A. Write complete qualitative analysis for chromium radical in a systematic manner. **05**

B. Write complete qualitative analysis for calcium radical in a systematic manner. **05**

C. Write complete qualitative analysis for chloride radical in a systematic manner. **05**

D. How will you identify and confirm the Aldehydic group in an organic compound? **05**

E. Write the material required, equation and procedure for the preparation of Iodoform. **05**

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Inter. (Part-II)-A-2019

Roll No._____ to be filled in by the candidate.

(For all Sessions)

Paper Code	8	4	8	5

Chemistry (Objective Type)

Time: 17 Minutes **Marks: 20**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. For which mechanism, the first step involved is the same?

(A) E1 and E2 **(B)** E2 and S_N2 **(C)** S_N1 and E2 **(D)** E1 and S_N1

2. Ethanol can be converted into ethanoic acid by:

(A) Hydrogenation **(B)** Hydration **(C)** Oxidation **(D)** Fermentation

3. The carbon atom of a carbonyl group is:

(A) SP^2 hybridized **(B)** SP^3 hybridized **(C)** SP hybridized **(D)** dSP^2 hybridized

4. Which reagent is used to reduce carboxylic group to alcoholic group?

(A) H_2/Ni **(B)** H_2/Pt **(C)** H_2/Fe **(D)** $LiAlH_4$

5. Which one of the following polymers is an addition polymer?

(A) nylon-6,6 **(B)** polystyrene **(C)** terylene **(D)** epoxy resin

6. Micronutrients are required in quantity ranging from:

(A) 4-40 gm **(B)** 6-200 kg **(C)** 6-200 gm **(D)** 4-40 kg

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

(A) eyes **(B)** ears **(C)** stomach **(D)** nose

8. Newspaper can be recycled again and again by how many times?

(A) 4 **(B)** 5 **(C)** 2 **(D)** 3

9. 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

10. Tincal is a mineral of:

(A) Al **(B)** Si **(C)** B **(D)** C

11. Laughing gas is chemically:

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

12. Which one of the following hydrogen halides is the weakest acid in aqeous solution?

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

13. Which one of the following sulphate is insoluble in water?

(A) Sodium sulphate **(B)** Potassium sulphate **(C)** Zinc sulphate **(D)** Barium sulphate

14. Which one of the following is a typical transition metal?

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

15. Which set of hybrid orbital has planar triangular shape?

(A) SP **(B)** SP^2 **(C)** SP^3 **(D)** dSP^2

16. Formula of chloroform is:

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

17. During nitration of benzene, the acitive nitrating agent is:

(A) NO_3 **(B)** NO_2^+ **(C)** NO_2^- **(D)** HNO_3

Roll No._____ اُمیدوار خود پُر کرے

(For all Sessions)

Chemistry (Essay Type)

Time: 2:40 Hours **Marks: 68**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. How do you justify the position of hydrogen at the top of VIIA group?
ii. Why does metallic character increase from top to bottom in a group of metals?
iii. Why does lime water turn milky with CO_2 but becomes clear with excess CO_2?
iv. Give equations to represent the given reaction. Borax is heated with CuO.
v. NO_2 is strong oxidizing agent, prove it with two examples.
vi. P_2O_5 is a powerful dehydrating agent, show it with two examples.
vii. What are Silicones?
viii. What are Silicates?
ix. Write four uses of HNO_3.
x. What is Biosphere?
xi. What is BOD?
xii. What are Isomers? Write isomers of pentane.

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. How acid and base catalyses the reactivity of carboxyl compound?
ii. Write two examples of Monodentate ligands.
iii. Write correct names of compounds by I.U.P.A.C system. (A) 4-methyl pentane (B) 3,3,5-Trimethyl hexane
iv. Write effect of branching on melting point of alkanes.
v. What informations do we get from x-ray analysis of benzene.
vi. Convert (a) $C_3H_7Cl \Rightarrow CH_3-CH=CH_2$ (b) $C_3H_7Cl \Rightarrow CH_3-CH_2-CH_2OH$
vii. Write down structures of (a) Vinyl alcohol (b) Lactic acid
viii. Point out difference between symmetric and unsymmetric ehter.
ix. Write chemistry of chromyl chloride test.
x. Write four uses of farmaldehyde.
xi. Draw structures of (a) Alanine (b) Valine
xii. Draw structures of Dimer of Carboxylic acid.

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. What is meant by degree of polymerization. Give an example.
ii. Write different stages in the manufacture of cement by wet process.
iii. Give trend of oxidizing power of halogens. Write any two factors on which oxidizing power of halogens depends.
iv. Write main raw materials used in the production of pulp and paper in Pakistan.
v. Define saponification number and iodine number of a fat or an oil.
vi. How are polyamide resins prepared? Give an example.
vii. Write any two applications of noble gases.
viii. Write any two methods of preparation of chlorinedioxide.
ix. Write any two essential qualities of a good fertilizer.

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5.(a) Discuss the position of hydrogen over IA and VII A group of periodic table. **4**
(b) Explain the preparation of Na metal by Down cell. **4**
6.(a) What do you mean by corrosion. Explain electrochemical theory in detail. **4**
(b) Discuss in detail any two components of the environment. **4**
7.(a) Define Isomerism. Explain position isomerism and functional group isomerism with one example each. **4**
(b) Discuss atomic orbital treatment of Benzene. **4**
8.(a) Explain free radical mechanism for the reaction of chlorine with methane in the presence of Sunlight. **4**
(b) Write down important physical properties and uses of phenols. How Bakelite is prepared from it (Phenol)? **4**
9.(a) How will you make the following conversions from ethyl bromide? **4**
i. Propane ii. Propanoic acid iii. Ethene iv. Ethyl cyanide
(b) Describe the mechanism of aldolcondensation reaction? Why does formaldehyde not give this reaction? **4**

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Roll No._____ to be filled in by the candidate.	(For all sessions)	Paper Code	8	4	8	7

Chemistry (Objective Type)

Time: 20 Minutes **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. Which of the following halogen is weak oxidizing agent?

(A) Cl_2 **(B)** F_2 **(C)** I_2 **(D)** Br_2

2. Which of the following is a typical transition element?

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

3. The state of hybridization of carbon atom is methane is:

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

4. Formula of chloroform is:

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

5. The electrophile in aromatic sulphonation is:

(A) H_4SO_4 **(B)** BF_3 **(C)** SO_3 **(D)** SO_3^+

6. Elimination bimolecular reaction involves:

(A) First order kinetics **(B)** Second order kinetics **(C)** Third order kinetics **(D)** zero order kinetics

7. Which compound shows hydrogen bondings?

(A) C_2H_6 **(B)** $CH_3—O—CH_3$ **(C)** C_2H_5Cl **(D)** C_2H_5OH

8. Percentage of water in Formalin is:

(A) 52% **(B)** 8% **(C)** 40% **(D)** 60%

9. Which of the following will have the highest boiling point?

(A) Methanal **(B)** Ethanal **(C)** Propanal **(D)** 2-Hexanone

10. Which of the following ester gives apricot flavour?

(A) Amyl acetate **(B)** Benzyl acetate **(C)** Amyl butyrate **(D)** Otyl acetate

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. Through how many zones does the charge pass in a rotary kiln?

(A) 4 **(B)** 3 **(C)** 2 **(D)** 5

13. Keeping in view the size of atoms,which order is the correct one?

(A) Mg>Sr **(B)** Ba>Mg **(C)** Lu>Ce **(D)** C l > I

14. Which ion will have the maximum value of heat of hydration?

(A) Na^+ **(B)** Cs^+ **(C)** Ba^+ **(D)** Mg^{+2}

15. Which element belongs to group IVA of the periodic table?

(A) Ba **(B)** I **(C)** Pb **(D)** O

16. Which of the following catalyst is used in contact process:

(A) FeO_3 **(B)** V_2O_5 **(C)** SO_3 **(D)** Ag_2O

17. The anhydride of $HClO_4$ is:

(A) ClO_3 **(B)** ClO_2 **(C)** Cl_2O_5 **(D)** Cl_2O_7

Roll No._____ to be filled in by the candidate.

(For all sessions)

Chemistry (Essay Type)

Time: 2:40 Hours **Marks: 68**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Why the second value of ionization energy is always greater than first ionization energy values?
ii. The hydration energies of Ions are in the given order: $Al^{+3}>Mg^{+2}>Na^{+}$. Explain.
iii. Write down the problems faced during the working of diaphragm cell.
iv. What happens when Lithium hydride is treated with water?Give reaction.
v. What is the action of an aqueous solution of borax on litmus and why?
vi. How does Aluminium react with non-metals?Give any two reactions.
vii. Phosphorus element can form five covalent bonds;nitrogen cannot,why?
viii. What is Laughing gas?How is it prepared?Give one reaction.
ix. Discuss the peculiar behaviour of Carbon.
x. Give the importance of Nitrogen fertilizers.
xi. Write down the steps for the manufacturing of urea.
xii. Describe the composition of good portland cement.

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Compare the physical states and colours of halogens at room temperature.
ii. What is the reason for variations of oxidation states of transition elements?
iii. What happens when the given compounds are heated?**(a)** Calcium Acetate. **(b)** Ammonium Acetate.
iv. Write down the Mechanism of the reaction between acetic acid and ethanol.
v. How Iodoform is prepared from acetaldehyde and Ethyl alcohol?
vi. Prepare m-chloronitrobenzene from benzene in two steps.
vii. Why HF is weaker acid than HCl?
viii. What are interstitial compounds?
ix. Halogens are strong oxidizing agents.Justify.
x. What are fatty acids?Give an example.
xi. Give mechanism of nitration of benzene.
xii. Write four important uses of Acetaldehyde.

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. What is the excellent method for the preparation of Alkyl iodide?
ii. Write reactions of methyl chloride and ethyl chloride with Sodium Lead Alloy.
iii. What do you know about the Vital Force Theory?
iv. What is Stream Cracking?
v. Why Alkanes are also called Paraffins?
vi. What is hydrogenolysis? Give an example.
vii. Give two uses of Methane.
viii. Give classification of Monohydric Alcohols.
ix. What do you know about Denaturing of Alcohol?

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5.(a) Write the essential features of all periodics in periodic table. **4**

(b) Write the peculiar behaviour of "Be". **4**

6.(a) Write down two reactions in which HNO_2 acts as an oxidizing agent and two reactions in which HNO_2 acts as reducing agent. **4**

(b) Write four common properties of transition elements. **4**

7.(a) What is Isomerism?Discuss position isomerism and geometrical isomerism. **4**

(b) How does acetaldehyde react with **(i)** CH_3CH_2MgBr **(ii)** $NaHSO_3$ **(iii)** NH_2OH **(iv)** N_2H_4. **4**

8.(a) Explain Halogenation of Alkanes with mechanism. **4**

(b) Differentiate between E_1 and E_2 reactions. **4**

9.(a) Write any four methods of preparation of Benzene. **4**

(b) Write reactions of alcohol in which C-O bond and O-H bond breaks(Two reactions in each case). **4**

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Inter-(Part-II)-A-Special Exam-2021

*Roll No.*_____ *to be filled in by the candidate.*	**(For all sessions)**	Paper Code	8	4	8	1

Chemistry (Objective Type)

Time: 20 Minutes **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1.1. Each of second and third periods contain elements:

(A) 2 **(B)** 18 **(C)** 8 **(D)** 32

2. Which one of the following does not belong to Alkaline earth metals?

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

3. Which metal is used in Thermite Process because of its reactivity?

(A) Iron **(B)** Copper **(C)** Aluminium **(D)** Zinc

4. All the elements of VI A are non-Metals except:

(A) Se **(B)** Po **(C)** S **(D)** Te

5. The anhydride of $HClO_4$ is:

(A) ClO_3 **(B)** ClO_2 **(C)** Cl_2O_5 **(D)** Cl_2O_7

6. The electron affinity values of halogens are:

(A) Large and Positive **(B)** Large and Negative **(C)** Small and Positive **(D)** Small and Negative

7. Which of the following is a non-typical Transition element?

(A) Cr **(B)** Mn **(C)** Zn **(D)** Fe

8. Ether show the phenomenon of:

(A) Positive Isomerism **(B)** Metamerism

(C) Functional group Isomerism **(D)** cis-trans isomerism

9. Which one of the following gases is used for artificial ripening of fruits?

(A) Ethene **(B)** Ethane **(C)** Methane **(D)** Propane

10. Benzene cannot undergo:

(A) Substitution reactions **(B)** Addition reactions

(C) Oxidation reactions **(D)** Elimination reactions

11. Which one of the following is not a Nucleophile?

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

12. Which compound shows Hydrogen Bonding?

(A) C_2H_6 **(B)** C_2H_5Cl **(C)** $CH_3—O—CH_3$ **(D)** C_2H_5OH

13. Which of the following has highest Boiling point?

(A) Mathanal **(B)** Ethanal **(C)** Propanal **(D)** 2-Hexanone

14. Ketones are prepared by the oxidation of:

(A) Primary Alcohol **(B)** Secondary Alcohol **(C)** Tertiary Alcohol **(D)** All of these

15. A carboxylic acid contains:

(A) a Hydroxyl group **(B)** a carboxyl group

(C) a hydroxyl and carboxyl group **(D)** a carboxyl and aldehydic group

16. Which reagent is used to reduce a carboxylic group to an alcohol?

(A) H_2/Ni **(B)** H_2/Pt **(C)** $NaBH_4$ **(D)** $LiAlH_4$

17. Micronutrients are required in quantity ranging from:

(A) 4-40Kg **(B)** 6-200 g **(C)** 6-200Kg **(D)** 4-40Kg

Roll No._____ to be filled in by the candidate.

(For all sessions)

Chemistry (Essay Type)

Time: 2:40 Hours **Marks: 68**

Section - I

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Define Atomic Radius.Give its trend in a period with reason.
ii. Why the size of a cation is smaller than its neutral atom?
iii. Write the chemical Formulas of Asbestos and Epsom salt.
iv. What happens when **(i)** Lithium carbonate is heated **(ii)** $NaNO_3$ is heated.
v. Briefly describe the chemistry of Borax bead test.
vi. What is the effect of heat on Boric acid?Write equations.
vii. Give the formulas of four boric acids with names.
viii. What is Aqua Regia?How does it dissolve gold?
ix. Write uses of Nitric acid.
x. What are Micro-nutrients?
xi. Write role of phosphorus fertilizers to the plants or soil.
xii. How Urea is prepared from Ammonia?Write only equations.

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Prepare acetone by dry distillation method with equation.
ii. Write industrial method for preparation of formaldehyde with equation.
iii. Write the chemical formulae of **(i)** Chlorine hexaoxide **(ii)** Chlorine heptaoxide.
iv. Complete and Balance the equation.**(i)** $CH_3COOH + NaOH \longrightarrow$ **(ii)** $CH_3COOH + Na_2CO_3 \longrightarrow$
v. On which factors oxidizing properties of halogens depends.
vi. Draw the structural formulae of **(i)** Nephthaline **(ii)** Anthracine.
vii. Why transition metal compounds are coloured?
viii. Why "HF" is a weakest acid than other halogen acids?
ix. Prepare Acetic acid from acetylene.
x. Write two objections in Kekul's Formula of Benzene.
xi. Write four uses of acetic acid.
xii. Write any two properties of transition elements.

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. What are Heterocyclic compounds. Give their two examples.
ii. How will you distinguish between ethene and ethane by one chemical test?
iii. State Markovnikove's rule by giving an example.
iv. Define Catenation.
v. Write four uses of methane.
vi. What are β-elimination reactions?Give an example.
vii. Convert ethylbromide into **(a)** butane **(b)** ethane.
viii. What are alcohols?Give their classification.
ix. Write two equations for the reactions of alcohols in which carbon oxygen bond is broken?

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5.(a) Discuss the position of hydrogen over I A and VII A group of periodic table. **4**

(b) Explain the peculiar behaviour of lithium, give eight points. **4**

6.(a) Explain preparation of Nitric acid through Birkland and Eyde process. **4**

(b) What is Corrosion?Discuss electrochemical theory of Corrosion. **4**

7.(a) Explain Cis-trans isomerism with examples. **4**

(b) How ethanal reacts with hydroxylamine?Also give its mechanism. **4**

8.(a) How alkynes can be prepared by Kolbe's Electrolytic method, write its mechanism. **4**

(b) What is β-elimination reaction?Differentiate between E_1 and E_2 elimination reactions. **4**

9.(a) Define alcohols, How will you differentiate in different types of alcohols by Lucas test? **4**

(b) Prepare following compounds by starting from benzene. **4**

(i) Maleic acid **(ii)** Benzoic acid