

**CHEMISTRY**223-1<sup>st</sup> Annual-(INTER PART – II)

Time Allowed : 20 Minutes

Q.PAPER – II ( Objective Type )

GROUP – I

Maximum Marks : 17

PAPER CODE = 8487 LHR-12-1-23

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	Which of these polymers is an addition polymer : (A) Nylon – 6,6 (B) Polystyrene (C) Terylene (D) Epoxy resin
2	Vinyl acetylene combines with $HCl$ to form : (A) Polyacetylene (B) Benzene (C) Chloroprene (D) Divinyl acetylene
3	The anhydride of $HClO_4$ is : (A) $ClO_3$ (B) $ClO_2$ (C) $Cl_2O_5$ (D) $Cl_2O_7$
4	According to Lewis concept ethers behave as : (A) Acid (B) Base (C) Acid as well as base (D) None of these
5	Benzene can not undergo : (A) Substitution reaction (B) Addition reaction (C) Oxidation reaction (D) Elimination reaction
6	Which of the following sulphate is not soluble in water : (A) Sodium sulphate (B) Potassium sulphate (C) Zinc sulphate (D) Barium sulphate
7	Phenol-formaldehyde resin is called : (A) Bakelite (B) Teflon (C) Orlon (D) Terylene
8	The state of hybridization of carbon atom in methane is : (A) $sp^3$ (B) $sp^2$ (C) $sp$ (D) $dsp^2$
9	Which test is applied to detect amino acids : (A) Fehling's test (B) Iodoform test (C) Ninhydrin test (D) Sodium nitroprusside test
10	The oxides of metals are : (A) Acidic (B) Basic (C) Amphoteric (D) Neutral
11	Which one of the following is not nucleophile : (A) $H_2O$ (B) $H_2S$ (C) $BF_3$ (D) $NH_3$
12	Tincal is a mineral of : (A) Al (B) B (C) Si (D) C
13	Which is not a calcareous material : (A) Lime (B) Clay (C) Marble (D) Marine shell
14	The carbon atom of a carboxyl group is : (A) $sp$ - hybridized (B) $sp^2$ - hybridized (C) $sp^3$ - hybridized (D) None of these
15	The residence time of NO in atmosphere is : (A) One day (B) Two days (C) Three days (D) Four days
16	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
17	Laughing gas is chemically : (A) NO (B) $N_2O$ (C) $NO_2$ (D) $N_2O_4$

Roll No \_\_\_\_\_ (To be filled in by the candidate)

(Academic Sessions 2019 – 2021 to 2021 – 2023)

CHEMISTRY  
PAPER – II ( Essay Type )

223-1<sup>st</sup> Annual-(INTER PART – II)  
GROUP – I

Time Allowed : 2.40 hours  
Maximum Marks : 68

SECTION – I LHR-12-1-23

2. Write short answers to any EIGHT (8) questions :

16

- (i) Write down the chemistry of borax bead test.
- (ii) Draw the electronic structure of CO and CO<sub>2</sub>.
- (iii) How will you convert boric acid into borax?
- (iv) Convert benzene into glyoxal.
- (v) Mention the product when phenol is distilled with Zn dust by giving reaction.
- (vi) Give two uses of silicones.
- (vii) Define saponification number.
- (viii) How polyvinyl acetate is formed? Write its equation.
- (ix) Draw the structure of cholesterol.
- (x) Write down the equation, when suspended impurities are removed in the colloidal form in raw water.
- (xi) Define acid rain.
- (xii) Mention the hazards of chloroform.

3. Write short answers to any EIGHT (8) questions :

16

- (i) Give the two reactions for the preparation of N<sub>2</sub>O.
- (ii) Write down four uses of HNO<sub>3</sub>.
- (iii) Give the reactions of H<sub>2</sub>SO<sub>4</sub> with : (a) NaCl (b) KNO<sub>3</sub>
- (iv) Convert CH<sub>4</sub> into formaldehyde by catalytic oxidation.
- (v) Define Markownikov's rule. Give an example.
- (vi) Prepare ozonide from ethene.
- (vii) Name two main factors which govern reactivity of R-X bond in alkyl halides.
- (viii) Define nucleophile. Give two examples.
- (ix) What is vital force theory?
- (x) What are heterocyclic organic compounds? Give two examples.
- (xi) Write down four essential qualities of a good fertilizer.
- (xii) Write down two chemical reactions involved in the preparation of urea.

4. Write short answers to any SIX (6) questions :

12

- (i) Complete and balance the following chemical equation :  
$$KMnO_4 + FeSO_4 + H_2SO_4 \rightarrow$$
- (ii) Give systematic names of the following :  
(a) K<sub>2</sub>[Cu(CN)<sub>4</sub>] (b) K<sub>2</sub>[PtCl<sub>4</sub>]
- (iii) What is meant by "central metal ion"? Explain with one example.
- (iv) How are ethene and diethyl ether produced from ethyl alcohol?
- (v) Explain Lucas test.

(Turn Over)

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4. (vi) Give reactions of phenol with : (a) Bromine water. (b) Conc.  $H_2SO_4$   
(vii) What is Benedict's solution test? Give reaction.  
(viii) How does hydrazine react with acetone?  
(ix) Write reaction between acetic acid and ammonia for the formation of amide.

### SECTION - II

Note : Attempt any THREE questions.

5. (a) Define hydration energy. Give its trend in the periodic table. 4  
(b) Explain peculiar behaviour of Beryllium. 4
6. (a) What happens when bleaching powder reacts with the following reagents : 1,1,1,1  
(i) dil.  $H_2SO_4$  (ii) Excess of conc.  $H_2SO_4$  (iii)  $NH_3$  (iv)  $CO_2$
- (b) How is urea manufactured in Pakistan? Describe in detail. 4
7. (a) What is orbital hybridization? Explain the geometry of ethyne by sp hybridization. 4  
(b) Explain Friedel-Crafts acylation of benzene along with its mechanism. 4
8. (a) How can ethyne be converted into : (i) Oxalic acid. (ii) Acetaldehyde. 2,2  
(b) Discuss  $S_N1$  mechanism for nucleophilic substitution reaction of alkyl halide. 4
9. (a) Discuss the oxidation of ketones and aldehydes in detail. 4  
(b) How can you prepare the following from ethanoic acid : 1,1,1,1  
(i) Ethyl alcohol. (ii) Ethane. (iii) Sodium acetate. (iv) Acetic anhydride.

No. \_\_\_\_\_ (To be filled in by the candidate)

(Academic Sessions 2019 – 2021 to 2021 – 2023)

**CHEMISTRY**

223-1<sup>st</sup> Annual-(INTER PART – II)

Time Allowed : 20 Minutes

GROUP – II

Maximum Marks : 17

PAPER CODE = 8486 LHR-12-2-23

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	Elimination bimolecular reactions involve : (A) First order kinetics (B) Second order kinetics (C) Third order kinetics (D) Zero order kinetics
2	Which one of the following is a typical transition element : (A) Sc (B) Y (C) Zn (D) Co
3	Cannizzaro's reaction is given by : (A) Formaldehyde (B) Acetone (C) Acetaldehyde (D) 3-pentanone
4	Which one of the following does not belong to alkaline earth metals : (A) Be (B) Ra (C) Ba (D) Rn
5	The normal amount of overhead ozone is about : (A) 150 DU (B) 250 DU (C) 350 DU (D) 450 DU
6	Synthetic rubber is made by the polymerization of : (A) Chloroform (B) Acetylene (C) Divinyl acetylene (D) Chloroprene
7	Which catalyst is used in the contact process : (A) $Fe_2O_3$ (B) $V_2O_5$ (C) $SO_3$ (D) $Ag_2O$
8	Which statement is incorrect : (A) All the metals are good conductor of electricity (B) All the metals are good conductor of heat (C) All the metals form positive ions (D) All the metals form acid oxides
9	Which compound is called a universal solvent : (A) $H_2O$ (B) $CH_3OH$ (C) $C_2H_5OH$ (D) $CH_3-O-CH_3$
10	Which one is argillaceous material : (A) Clay (B) Lime (C) Marble (D) Marine shell
11	The electrophile in aromatic sulphonation is : (A) $H_2SO_4$ (B) $HSO_4^-$ (C) $SO_3$ (D) $SO_3^+$
12	The anhydride of $HClO_4$ is : (A) $ClO_3$ (B) $Cl_2O_5$ (C) $ClO_2$ (D) $Cl_2O_7$
13	Which of the following element is present in all amino acids : (A) Br (B) N (C) Cl (D) Cu
14	Ethers show the phenomenon of : (A) Position isomerism (B) Functional group isomerism (C) Metamerism (D) Cis-trans isomerism
15	Aluminium oxide is : (A) Acidic oxide (B) Basic oxide (C) Amphoteric oxide (D) None of these
16	According to Lewis concept ethers behave as : (A) Acid (B) Base (C) Acid as well as a base (D) None of these
17	Alkane nitriles can be converted into carboxylic acids by : (A) Hydration (B) Acid hydrolysis (C) Hydrogenation (D) Oxidation

Roll No \_\_\_\_\_ ( To be filled in by the candidate)

(Academic Sessions 2019 – 2021 to 2021 – 2023 )

**CHEMISTRY**

223-1<sup>st</sup> Annual-(INTER PART – II)

Time Allowed : 2.40 hours

PAPER – II ( Essay Type )

GROUP – II

Maximum Marks : 68

SECTION – I

LHR-12-2-3

2. Write short answers to any EIGHT (8) questions :

16

- (i) How does orthoboric acid react with : (a) NaOH (b)  $C_2H_5OH$
- (ii) Why are aluminium sheets said to be free from corrosion?
- (iii) What is water glass? How is it prepared? Give reaction.
- (iv) How is ethyl benzene obtained from bromobenzene? Give reaction.
- (v) How is maleic acid obtained from benzene? Give reaction.
- (vi) Why is nitro group meta-directing?
- (vii) What is meant by addition polymerization? Give an example.
- (viii) Give structures of the monomers of polyvinyl chloride and polystyrene.
- (ix) What is the difference between oligosaccharides and polysaccharides?
- (x) How is quality of raw water improved by aeration process?
- (xi) Why is ozone layer depleting?
- (xii) How is plastic recycled by depolymerization?

3. Write short answers to any EIGHT (8) questions :

16

- (i) What is catalytic cracking? Give its importance.
- (ii) What are alicyclic compounds? Give example.
- (iii) Convert ethyne into acrylonitrile.
- (iv) What are epoxides? How these are prepared from alkene?
- (v) Give nitration reaction of methane.
- (vi) How does conc.  $H_2SO_4$  reacts with “ C and S ”?
- (vii) Give the effect of heat on  $H_3PO_4$ .
- (viii) What is laughing gas? How is it prepared?
- (ix) Define leaving group. Give some examples.
- (x) Convert  $C_2H_5MgBr$  into ethane.
- (xi) What are fertilizers? Why they are needed?
- (xii) Mention raw materials used for cement.

4. Write short answers to any SIX (6) questions :

12

- (i) Define the terms : (a) Coordination sphere. (b) Ligand.
- (ii) Give the systematic names to following complexes :  
(a)  $[Fe(H_2O)_6]^{2+}$  (b)  $Na_3[CoF_6]$
- (iii) What is sacrificial corrosion?
- (iv) How will you distinguish between alcohol and phenol?
- (v) How will you convert methanol into ethanol?

(Turn Over)

(2)

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4. (vi) Why ethanol has higher boiling point than diethyl ether?  
(vii) How are ketones oxidized by  $K_2Cr_2O_7 / H_2SO_4$ ?  
(viii) Give the mechanism of addition of HCN to acetone.  
(ix) What is the strecker's synthesis?

### SECTION – II

Note : Attempt any THREE questions.

5. (a) Describe the metallic and non-metallic character of elements in the modern periodic table. 4  
(b) How is sodium metal prepared by Down's cell? Explain it. 4
6. (a) Give any four applications of noble gases. 4  
(b) What is setting of cement? Give the reaction taking place in 1<sup>st</sup> 24 hours. 1,3
7. (a) What is functional group? Give three examples of oxygen containing functional groups. 4  
(b) Explain Friedel-Crafts alkylation of benzene alongwith its mechanism. 4
8. (a) What is polymerization? Describe the linear and cyclic polymerization of alkynes. 1,3  
(b) By using Grignard reagent prepare : (i) Primary alcohol. (ii) Carboxylic acids. 2,2
9. (a) Describe mechanism of reaction of aldehyde (having no  $\alpha$ -hydrogen) in which both oxidation and reduction takes place simultaneously. 4  
(b) Write the mechanism of ester formation by using carboxylic acid and ethanol. 4