

SECTION-I

QUESTION NO. 2 Write short answers any Eight (8) of the following **D9K-91-22** 16

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| i | Differentiate between Hydrides and Halides |
| ii | Why oxidation state of noble gases is usually zero ? |
| iii | Write formula of Calcite and Barite |
| iv | What is effect of heat on LiOH and Mg(OH) ₂ , give equations |
| v | Write four common properties of group IVA elements |
| vi | Write formulas of following minerals of silicon (i) Zircon (ii) Talc |
| vii | Conc. H ₂ SO ₄ is oxidizing agent, prove the statement by two reactions |
| viii | What is effect of heat on H ₃ PO ₄ ? |
| ix | Define coordination number and coordination sphere |
| x | How does cathode coating prevent iron from corrosion ? |
| xi | Write chemical reactions involved in preparation of urea from CO ₂ and NH ₃ |
| xii | Write names and formula of two phosphatic fertilizer |

QUESTION NO. 3 Write short answers any Eight (8) of the following 16

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|------|--|
| i | Write down the factors on which the oxidizing power of halogens depends on |
| ii | What are Freons and Teflon ? |
| iii | Define hetero cyclic compounds. Give two examples |
| iv | Why there is no free rotation around a double bond ? |
| v | How the Ethylene Glycol is prepared from ethane. Give the reaction |
| vi | Write down four uses of Ethyne |
| vii | What is Mustard gas ? How is it prepared ? |
| viii | Define Nucleophile. Give two examples |
| ix | Give the reaction of Ethyl magnesium Bromide with ethylene epoxide |
| x | What are thermoplastic polymer ? Give two examples |
| xi | Enlist four properties of enzymes |
| xii | Discuss the rancidity of fats and oils |

QUESTION NO. 4 Write short answers any Six (6) of the following 12

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|------|---|
| i | Give names and possible isomeric structure of xylene |
| ii | Convert the Benzene into m-chloronitrobenzene |
| iii | Why absolute alcohol cannot be prepared by fermentation ? Discuss |
| iv | Complete the reaction : Phenol + Br ₂ \longrightarrow |
| v | How will you distinguish between methanal and ethanal ? Give reaction |
| vi | How does alanine react with alcohol ? |
| vii | Convert CH ₃ COOH into Glycine |
| viii | What is ozone hole ? Give its significance |
| ix | Mention some harmful effects of acid rain |

SECTION-II

Note: Attempt any Three questions from this section

8 x 3 = 24

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|---------|---|
| Q.5-(A) | Discuss the position of hydrogen on top of Group VIIA (Four similarities and Four differences) |
| (B) | Write note on peculiar behaviour of Boron |
| Q.6-(A) | Write down any eight properties of lithium in which it behaves differently from its own group members |
| (B) | Write down the systematic names of following complexes
(i) [Fe(CO) ₅] (ii) [Co(NH ₃) ₆] Cl ₃ (iii) Na ₃ [CoF ₆] (iv) K ₂ [PtCl ₆] |
| Q.7-(A) | Explain Reforming of petroleum with example |
| (B) | Define Nucleophilic substitution reaction. Also explain S _N 1 mechanism with example |
| Q.8-(A) | Write a comprehensive note on the polymerization of alkynes |
| (B) | Define and explain aldol condensation along with mechanism |
| 9.(A) | Describe the structure of benzene on the basis of atomic orbital treatment |
| (B) | How would you convert ? : (i) Phenol to Bakelite (ii) Methanol to Ethanol |

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.

QUESTION NO. 1

DKK-92-22

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|----|---|--|---|
| 1 | Which statement is incorrect ? | (A) All metals are good conductor of electricity | (B) All metals are good conductor of heat |
| | | (C) All metals form positive ions | (D) All metals form acidic oxides |
| 2 | Which one of following is not an alkali metal ? | (A) Francium | (B) Caesium |
| | | (C) Rubidium | (D) Radium |
| 3 | The chief ore of aluminium is. | (A) Na_3AlF_6 | (B) $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$ |
| | | (C) Al_2O_3 | (D) $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$ |
| 4 | Laughing gas is chemically. | (A) NO | (B) N_2O |
| | | (C) NO_2 | (D) N_2O_4 |
| 5 | The anhydride of HClO_4 is | (A) ClO_3 | (B) ClO_2 |
| | | (C) Cl_2O_5 | (D) Cl_2O_7 |
| 6 | Which of following is a non-typical transition element ? | (A) Cr | (B) Mn |
| | | (C) Zn | (D) Fe |
| 7 | Linear shape is associated with which set of hybrid orbitals | (A) sp | (B) sp^2 |
| | | (C) sp^3 | (D) dsp^2 |
| 8 | β - β' - dichloroethyl sulphide is commonly known as. | (A) Mustard gas | (B) Laughing gas |
| | | (C) Phosgene gas | (D) Bio-gas |
| 9 | Which compound is most reactive one ? | (A) Benzene | (B) Ethene |
| | | (C) Ethane | (D) Acetylene |
| 10 | Which of the following is not a nucleophile ? | (A) H_2O | (B) H_2S |
| | | (C) SO_3 | (D) NH_3 |
| 11 | Cannizzaro's reaction is not given by. | (A) Formaldehyde | (B) Acetaldehyde |
| | | (C) Benzaldehyde | (D) Trimethylacetaldehyde |
| 12 | Which enzyme is not involved in fermentation of starch ? | (A) Diastase | (B) Zymose |
| | | (C) Urease | (D) Invertase |
| 13 | The solution of which acid is used for seasoning of food. | (A) Formic acid | (B) Acetic acid |
| | | (C) Benzoic acid | (D) Butanoic acid |
| 14 | Which one of following element is not present in all proteins ? | (A) Carbon | (B) Hydrogen |
| | | (C) Nitrogen | (D) Sulphur |
| 15 | Phosphorus helps the growth of. | (A) Root | (B) Stem |
| | | (C) Leave | (D) Seed |
| 16 | Which of following is secondary pollutant ? | (A) CO | (B) NH_3 |
| | | (C) SO_3 | (D) PAN |
| 17 | A single chloride free radical can destroy upto. | (A) 10000 O_3 molecules | (B) 1000 O_3 molecules |
| | | (C) 100000 O_3 molecules | (D) 1000000 O_3 molecules |

QUESTION NO. 2 Write short answers any Eight (8) parts of the following **09 K-42-22** 16

i	Why the metallic character increases from top to bottom in group of metals ?
ii	Diamond is a non-conductor but graphite is a fairly good conductor. Give the reason.
iii	Write down the formula of (i) Carnallite (ii) Gypsum
iv	Why the aqueous solution Na_2CO_3 is basic in nature ?
v	Write down the uses of Boric Acid.
vi	What is the effect of temperature on semi conductors ?
vii	Write two reactions in which H_2SO_4 acts as dehydrating agent.
viii	Write down four uses of Nitric acid.
ix	Write down the electronic configuration of (i) ${}_{24}\text{Cr}$ (ii) ${}_{29}\text{Cu}$
x	Define corrosion. How it can be prevented ? Name any two methods.
xi	What are fertilizers ? Why are they needed ?
xii	What reactions take place in the setting of cement in first 24 hours ?

QUESTION NO. 3 Write short answers any Eight (8) parts of the following 16

i	Give any four uses of bleaching powder.
ii	What is disproportionation reaction ? Give reaction of NaOH with Cl_2 .
iii	Define functional group. Give names and formula of any two oxygen containing functional groups.
iv	From where does the energy come to excite Carbon atom in hybridization ? Briefly explain.
v	Give nitration reaction of methane. Also give its importance.
vi	Convert 1, 2- dibromoethane into ethene. Also give conditions.
vii	Convert 2-Butyne into trans-2-Butene.
viii	Complete the following reaction. $\text{C}_2\text{H}_5\text{MgBr} + \text{Epoxide} \xrightarrow[\text{H}_3\text{O}^+]{\text{Ether}}$
ix	Define the following with one example. (i) Electrophile (ii) Nucleophile
x	Define Iodine number. Give its importance.
xi	Draw the structural formula of an oil (Glyceryl trioleate).
xii	Give the importance of Proteins (any four).

QUESTION NO. 4 Write short answers any Six (6) parts of the following 12

i	What are objections to Kekule's formula of benzene ?
ii	Define resonance also give one example.
iii	What is fermentation ? Write essential conditions of fermentation.
iv	Discuss preparation of ethers.
v	How are ketones oxidized ? Give example.
vi	How acetic acid reacts with (a) PCl_5 (b) SOCl_2
vii	Discuss strecker synthesis.
viii	Define primary and secondary pollutants.
ix	Explain the terms briefly. (a) BOD (b) COD

SECTION-II

Note: Attempt any Three questions from this section

8 x 3 = 24

Q.5- (A)	Discuss the position of hydrogen with carbon family giving any two Similarities and Dissimilarities.
(B)	Give reactions of Aluminium with (i) NaOH (ii) H_2SO_4 (iii) O_2 (iv) HCl
Q.6- (A)	Discuss the peculiar behaviour of Lithium with respect to the other member of alkali metals. Any four points.
(B)	Explain electrochemical theory of corrosion in detail.
Q.7-(A)	What is orbital hybridization, explain sp-type of hybridization with example.
(B)	Write a descriptive note on $\text{S}_\text{N}2$ reaction.
Q.8- (A)	Discuss Kolbe's electrolytic method for preparation of ethene.
(B)	How does acetaldehyde react with (i) Sodium bisulphite (ii) Hydrazine (iii) Ethyl alcohol (iv) Sodium Borohydride
Q.9- (A)	Describe nitration of benzene with mechanism.
(B)	How does phenol react with following reagents. (i) NaOH (ii) Zn (iii) HNO_3 (iv) Bromine water.