

Roll No. _____ to be filled in by the candidate

(For All Sessions)

Group - II

Chemistry (Essay Type)

Time: 2:40 Hours

Section - I

Marks:68

2- Write short answers of any eight parts from the following.

2 x 8 = 16

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|--|---|
| i. What are rare-earth elements? Why are they called so? | ii. A positive ion is smaller in size than its parent atom. Explain |
| iii. What is line water? Write down its use. | iv. Give formulas of minerals. (a) Dolomite (b) Natron |
| v. Give names and formulas of two acids of boron. | vi. Why is aluminum not found in free state? |
| vii. P_2O_5 is a powerful dehydrating agent. Prove with two examples | viii. Write two uses of nitric acid. |
| ix. Define coordination sphere. Give an example. | x. Why does damaged tin plated iron get rusted quickly? |
| xi. Why NH_4NO_3 cannot be used as a fertilizer in paddy rice field? | xii. Discuss digestion process used in the manufacturing of paper. |

3- Write short answers of any eight parts from the following.

2 x 8 = 16

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|--|--|
| i. Why HF is weaker acid than HCl? | ii. What are disproportionation reaction? Give example. |
| iii. What are Alicyclic compounds? Give example. | iv. Write structural formulas of the two possible isomers of C_4H_{10} |
| v. What is Wolff-Kishner's reduction? | vi. Why alkenes are also known as olefins? |
| vii. How acetylene is converted into Benzene? | viii. What are primary, secondary and tertiary alkyl halides? |
| ix. Using ethyl bromide as a starting material how would you prepare following. (i) Ethyl cyanide (ii) Ethyl alcohol | x. What is the difference between a glycoside linkage and peptide Linkage? |
| xi. Write down importance of Lipids. | xii. What is Iodine number? Give its use. |

4- Write short answers of any six parts from the following.

2 x 6 = 12

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|--|--|
| i. Draw the structures of m-Xylene and p-Xylene. | ii. Predict the major product of Bromination of the following compounds.
(a) Bromo Benzene (b) Benzaldehyde |
| iii. Write the general formula of primary and secondary alcohol with one example each. | iv. Write the two reactions of phenol in which "O-H" bond break. |
| v. How does formaldehyde react with (a) $NaHSO_3$ (b) HCN | vi. Justify the acidic and basic character of Amino acid? |
| vii. Starting from carboxylic acid, prepare Amino acid. | viii. What is the role of chlorofluorocarbon in destroying ozone layer. |
| ix. What are the leachates? | |

Section - II

8 x 3 = 24

NOTE : Answer any three questions from the following.

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| 5.(a) Discuss blocks in modern periodic table. | (b) How does Al react with following
(i) HCl (ii) N_2 (iii) H_2SO_4 (conc) (iv) H_2 | 04+04 |
| 6.(a) Describe the manufacture of Sodium Hydroxide by diaphragm cell. (Diagram is not required) | (b) Explain the electro chemical theory of corrosion. | 04+04 |
| 7.(a) Write a note on cracking of petroleum | (b) How Grignard's reagent reacts with:
(i) Epoxide (ii) Formaldehyde (iii) Acetaldehyde (iv) Acetone | 04+04 |
| 8.(a) Write any four methods of preparation of alkenes. | (b) Define Cannizzaro's reaction. Give its mechanism. | 04+04 |
| 9.(a) Explain Friedel-Crafts Acylation of benzene along with mechanism. | (b) Explain the industrial preparation of methanol with diagram. | 04+04 |