

SECTION – I

2. Write short answers to any EIGHT parts.

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- (i) How do you justify the position of hydrogen at the top of group IA?
- (ii) Why does metallic character increase from top to bottom in a group of metals?
- (iii) Write any four uses of lime in industries.
- (iv) Write balanced equations for the reactions of Al with (a) H_2SO_4 (b) $NaOH$
- (v) How does borax serve as a water softening agent?
- (vi) Give the names and formulae of different acids of boron.
- (vii) Write balanced equations for the reaction of orthophosphoric acid with $NaOH$.
- (viii) NO_2 is a strong oxidizing agent. Prove the truth of this statement giving examples.
- (ix) Complete and balance the given chemical equations. (a) $P + NO \rightarrow$ (b) $HNO_3 + HI \rightarrow$
- (x) What is meant by setting of cement? Discuss the reactions taking place in first 24 hours.
- (xi) What are the prospects of paper industry in Pakistan?
- (xii) Explain the process of incineration of industrial waste.

3. Write short answers to any EIGHT parts.

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- (i) What is the difference between tautomerism and metamerism?
- (ii) What is Raney nickel? Write its function.
- (iii) Convert CH_4 to $H-COOH$
- (iv) Write name of two groups which are called as meta directing group and two groups which are called as ortho, para-directing groups.
- (v) Write mechanism for sulphonation of benzene.
- (vi) Convert C_2H_5Br to tetra ethyl lead (TEL).
- (vii) Convert C_2H_5Br to $(C_2H_5)_3NH$
- (viii) Why absolute alcohol cannot be prepared by fermentation process?
- (ix) Draw structure of (a) methyl-n-propyl ether (b) methoxy benzene.
- (x) Write structure of (a) alanine (b) valine.
- (xi) What is ninhydrin test?
- (xii) Point out difference between protein and polypeptide.

4. Write short answers to any SIX parts.

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- (i) How are the halogen acids ionized in water?
- (ii) What is bleaching powder? Give its two uses.
- (iii) Describe chemical reactions of bleaching powder with (a) HI (b) CO_2
- (iv) How does the process of galvanizing protect iron from rusting?
- (v) Give four uses of acetaldehyde.
- (vi) How will you distinguish between ethanal and propanal?
- (vii) What are thermoplastic polymers? Give two examples.
- (viii) What are lipids? Give their types.
- (ix) Define saponification number and iodine number.

SECTION – II Attempt any THREE questions. Each question carries 08 marks.
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5. (a) Give two similarities and two dissimilarities of hydrogen with elements of group IA. 04
 (b) Write any eight uses of lime in industry. 04
6. (a) Describe rules for naming the coordination complexes and give one example. 04
 (b) Describe air pollution briefly. 04
7. (a) What is cracking? Discuss its two types. 04
 (b) Write the classification of aromatic hydrocarbons giving one example of each. 04
8. (a) Describe Kolbe's method for the preparation of ethyne with reaction mechanism. 04
 (b) Describe Lucas test for the identification of primary, secondary and tertiary alcohols with suitable chemical reactions. 04
9. (a) Differentiate between S_N1 and S_N2 reactions. 04
 (b) Write one laboratory and one industrial method for the preparation of acetaldehyde. 04