

- (c) pH of a Buffer solution (d) Strength of acid solution
3. Which of the following is not an alkali metal?
- (a) Li (b) Na
(c) K (d) Mg
4. Find out the ore of aluminium
- (a) Bauxite (b) Iron Pyrite
(c) Magnetite (d) Cinnabar
5. The oxidation state of phosphorous in H_3PO_4 is
- (a) +3 (b) +5
(c) +1 (d) +2
6. The XeF_4 shape of the molecule is
- (a) Linear (b) Tetrahedral
(c) Square planar (d) Trigonal bipyramidal
7. Which of the following is a process in petroleum refining?
- (a) Filtration (b) Cracking
(c) Sublimation (d) Fermentation
8. Find out the compound which follows Markownikoff's rule in addition
- (a) Ethene + HBr (b) Butyne + H_2

- (c) Ethyne + Br₂ (d) Propene + HCl
9. Naphthalene is an example of
- (a) Monocyclic compound
(b) Aliphatic compound
(c) Polynuclear aromatic hydrocarbon
(d) Heterocyclic compound
10. In electrophilic substitution, the attacking species is,
- (a) Nucleophile (b) Free radical
(c) Electrophile (d) Carbocation

PART - B (5 X 5 = 25 Marks)

**Answer ALL Questions choosing either (a) or (b).
Answer should not exceed 250 words.**

11. (a) Define common ion effect. List out the factors affecting the degree of dissociation.

(OR)

- (b) Explain the Arrhenius concept and Bronsted -Lowry concept of acids and bases with suitable examples.

12. (a) What is the diagonal relationship between Li and Mg? Explain with examples.

(OR)

- (b) Explain the structure and bonding in diborane.

13. (a) Write the general characteristics of group 15 elements.

(OR)

(b) Write a short note on Caro's acid.

14. (a) Explain the mechanism of E_1 and E_2 elimination reactions.

(OR)

(b) Explain the Bayer's strain theory with example and mention its limitations.

15. (a) Explain Huckel's rule with examples.

(OR)

(b) Discuss the structure, stability and molecular orbital picture of benzene.

PART - C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 500 words.

16. (a) Explain the concept and types of buffer solutions. Describe the mechanism of buffer action with reference to acidic and basic buffers.

(OR)

(b) Discuss acid-base indicators. Explain the theories behind the working of phenolphthalein and methyl orange.

17. (a) Explain the preparation and structure of borazine.

(OR)

(b) Compare carbon with silicon. Write the preparation and properties of CS_2

18. (a) Discuss the properties and structure of ozone.

(OR)

(b) Describe interhalogen compounds. Write the preparation, properties and structures of BrF_5 and IF_7

19. (a) State Saytzeff's and Hofmann's rule. Show how the rules explain the orientation in elimination.

(OR)

(b) What is alkadienes and classify them. Explain the stability of conjugated dienes with suitable theory.

20. (a) Discuss the general mechanism of aromatic electrophilic substitution of nitration, sulphonation and Friedel craft's alkylation reactions.

(OR)

(b) How is naphthalene synthesized by Haworth synthesis and discuss its electrophilic substitution reactions?