

2024(Backlog)

(Session : 2022-26)

Time : 3 hours

Full Marks : 75

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group – A

(Compulsory)

1. Answer the following questions : 1×5 = 5

   (a) What is nodal plane ?

   (b) Write the general electronic configuration of S-Block elements.

   (c) What are Nucleophiles ?

(d) $CH_3 - CH_2 - Br \xrightarrow[\text{dry ether}]{Na} ?$

(e) State first law of thermodynamics.

2. Discuss Bohr's theory and its limitations. 5

3. Describe the Inductive effect. 5

Group – B

Answer any **four** questions of the following :

4. (a) Describe Ionic Bonding and its characteristic features. What is Fajan's rule ? 10

(b) Write shape of PCl_5 and NH_3 on the basis of VSEPR theory. 5

5. Discuss Crystal Field Theory (CFT) and crystal field Stabilization energy and factors affecting it.

10+5 = 15

6. Write short notes on any **three** of the following :

5×3 = 15

(a) Resonance and Resonance energy

(b) Wurtz reaction

(c) Huckel's rule

(d) Markownikffu's rule

7. What are SN^1 and SN^2 reactions ? Discuss alimination in alkyl halides and Saytzeff's rule.

10+5 = 15

8. (a) Describe postulates of kinetic theory of gases. $7\frac{1}{2}+7\frac{1}{2}$ = 15

(b) What is Order and Molecularity of reactions ?

9. Write short notes on any **three** of the following :

5×3 = 15

(a) Le-Chatelier's principle

(b) Half-life of a reaction

(c) Catalyst and how it affect the rate of reaction

(d) Bond energy and its calculation