2024(Backlog)

Time : 3 hours

Full Marks : 60

Pass Marks : 24

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 **all** questions of the following : $1 \times 10 = 10$

   (a) Write structural formula of Borazine

   (b) What is calcination ?

   (c) Bauxite is an ore of which metal ?

   (d) Give one example of Lewis acid.

   (e) What is banana bond ?

   (f) Name one allotrope of carbon.

(g) How many O-H bonds are present in boric acid ?

(h) According to HSAB principal which one more stable among $[AlF_6]^{-3}$ and $[AlI_6]^{-3}$.

(i) What are polyhalide ions?

(j) Which property of carbon enables it to form a large number of carbon compound ?

2. Explain Bronsted-Lowry concept of acids and basses with example. 5

Group – B

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

3. (a) Explain Ellingham diagram for metal oxide reduction. 8

(b) Discuss purification of nickel by Mond's process. 7

4. (a) Write the preparation, properties and structure of Borates and Silanes. 8

(b) What are hydrides ? Give its classificaton in details. 7

5. (a) Using VSEPR theory deduce and draw molecular shape of given compounds XeO_3, $XeOF_4$, XeO_2F_2, XeO_4 and XeF_2. 10

(b) What are Clathrates ? 5

6. What are Siloxanes and Polysulphates. Explain with examples and give their applications. 15

7. Write short notes on any **three** of the following : 5×3 = 15

(a) Allotropy

(b) Parting Process

(c) Polyhalide Ions

(d) Levelling Solvents

(e) Inert pair effect