

9. Write the names of the products *A* and *B* formed in the following reaction.



10. Write the names and formulae of any two minerals of beryllium.

SECTION B

Note : Answer **any six** questions.

6 × 4 = 24

11. Explain sp^3d hybridization with an example.
12. Deduce Boyle's law and Graham's law of diffusion from a kinetic gas equation.
13. Define molecular formula. A carbon compound contains 12.8% carbon, 2.1% hydrogen, 85.1% bromine. The molecular weight of the compound is 188. Calculate the molecular formula (atomic weight of Bromine is 80).
14. Describe the preparation of hydrogen peroxide by the electrolytic method.
15. Explain the preparation of sodium hydroxide by the Nelson process.
16. Describe any one method of preparation of diborane with a balanced equation. How does diborane react with NH_3 to form borazole?
17. What is blue gas? How is it prepared?
18. Explain the structure of XeO_3 on the basis of the valence bond theory.

SECTION C

Note : Answer **any two** questions.

2 × 8 = 16

19. What are quantum numbers? Explain the various types of quantum numbers with their significance.
20. What is a periodic property? How do the following properties change in a (i) group and (ii) period? Explain :
- Atomic radius
 - Ionization enthalpy (ionization energy)
 - Electron gain enthalpy (electron affinity)
21. Describe any two methods of preparation of benzene with its corresponding equation. Explain the alkylation, nitration, sulphonation and halogenation of benzene. Give balanced equations.