123	II
Total No. of Questions - 21 Regd. Total No. of Printed Pages - 2	
Part - III CHEMISTRY, Paper - I	
(English Version)	
Time: 3 hours Mo	ax. Marks: 60
Note: Read the following instructions carefully.	
1) Answer all the questions of Section 'A'. Answer any six questions in Section 'B' and any two questions in Section 'C'.	
2) In Section 'A', questions from Sr. Nos. 1 to 10 are of "Very short answer type". Each question carries two marks. Every answer may be limited to 2 or 3 sentences. Answer all these questions at one place in the same order.	
3) In Section 'B', questions from Sr. Nos. 11 to 18 are of "Short answer type". Each question carries four marks. Every answer may be limited to 75 words.	
4) In Section 'C' questions from Sr. Nos. 19 to 21 are of "Long answer type". Each question carries eight marks. Every answer may be limited to 300 words.	
5) Draw labelled diagrams wherever necessary for questions in Section 'B' and 'C'.	
SECTION A	
Note: Answer all questions.	$10 \times 2 = 20$
1. What are the effects of acid rains?	
2. Define COD and BOD,	
3. Define Joule-Thomson effect.	
4. Write two uses of heavy water.	
5. Calculate the oxidation number of chromium in the following. a) $Cr_2O_7^{-2}$ b) Cr_2O_3	
6. Why is the boiling point of H_2O is more than HF ?	
7. Which types of bonds are present in NH_4Cl ? Write its structure.	
8. Write the structural formulae of the following compounds. a) 2-amino propanoic acid b) 2, 3-dimethyl hexanal	
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- 9. Write the names of the products A and B formed in the following reaction. $C_0H_0Cl \xrightarrow{Alc.\ KOH} A \xrightarrow{Br_2/CCl_4} B$
- 10. Write the names and formulae of any two minerals of beryllium.

SECTION B

Note: Answer any six questions.

 $6 \times 4 = 24$

- 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 XeO3 on the basis of the valence bond theory.

SECTION C

Note: Answer any two questions.

 $2 \times 8 = 16$

- 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:
 - a) Atomic radius
 - b) Ionization enthalpy (ionization energy)
 - c) 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.