

**123****III**

Total No. of Questions - 21

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Total No. of Printed Pages - 2 . No.

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**Part - III**  
**CHEMISTRY, Paper - I**  
**(English Version)**

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Time : 3 Hours ]

[ Max. 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 two or three 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 Section - 'C'.

**SECTION - A****10 × 2 = 20****Note :** Answer all questions :

1. Why  $\text{KO}_2$  paramagnetic ?
2. Describe the importance of plaster of paris.
3.  $\text{H}_2\text{O}$  has a higher boiling point than that of  $\text{H}_2\text{S}$ . Give reasons.
4. State First Law of thermodynamics.
5. State Graham's law of diffusion.
6. Calculate the weight of 0.1 mole of Sodium carbonate.

[ 1 of 2 ]

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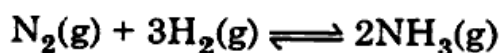
7. What is Bronsted base ? Give an example.
8. Write the structures of (a) trichloro ethanoic acid (b) Neopentane.
9. Give two uses of Aluminium.
10. Boron is unable to form  $\text{BF}_6^{3-}$  ion. Explain.

### SECTION - B

6 × 4 = 24

**Note : Answer any six questions :**

11. Explain the difference in properties of diamond and graphite on the basis of their structure.
12. Write in brief on (i) ionic hydrides (ii) interstitial hydrides.
13. State and explain Hess's law with example.
14. Derive the relation between  $K_p$  and  $K_c$  for the equilibrium.



15. Balance the following redox reaction by ion - electron method in acidic medium :  
$$\text{MnO}_4^- (\text{aq}) + \text{SO}_2(\text{g}) \longrightarrow \text{Mn}^{2+}(\text{aq}) + \text{HSO}_4^-(\text{aq})$$
16. Deduce Boyle's law and Charles' law from kinetic gas equation.
17. Explain the hybridisation in  $\text{SF}_6$ .
18. What is hydrogen bond ? Explain different types of hydrogen bonds with examples.

### SECTION - C

2 × 8 = 16

**Note : Answer any two questions :**

19. Give two methods of preparation of benzene. Explain halogenation and alkylation of benzene.
20. Explain Quantum numbers.
21. Define  $\text{IE}_1$  and  $\text{IE}_2$ . Why  $\text{IE}_2 > \text{IE}_1$  for a given atom ? Discuss the factors that effect IE of an element.