



# ST. FRANCIS DE SALES COLLEGE

A FRANSALIAN INSTITUTE OF HIGHER EDUCATION **AUTONOMOUS**

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📍 Electronics City P.O., Bengaluru - 560 100, Karnataka, INDIA ☎ (+91) 8088140679 ✉ pro@sfscollege.in 🌐 www.sfscollege.in

**END SEMESTER EXAMINATION –NOV/ DEC 2025**

**CHEMISTRY - I SEMESTER BSC (Repeaters)**

**24BSC15B: CHEMISTRY-I**

**Time: 3 Hours**

**Max. Marks: 80**

**Instruction:** Answer should be written completely in English.

## SECTION - A

**I** Answer any **TEN** questions. Each question carries **TWO** marks.

**(10X2=20)**

1. Define accuracy and precision.
2. Define instrument errors? How can it be minimized?
3. Define errors. Mention the type of errors.
4. What are transuranic elements? Give two examples.
5. Mention any two applications of Neon.
6. Write the general electronic configuration of noble gases.
7. Why 'f' block elements are called inner transition elements.
8. What are actinides? Give examples.
9. Define parts per million and parts per billion?
10. Write the general electronic configuration of noble gases.
11. Why 'd' block elements are called transition elements.
12. How do the ionization energies of chalcogens differ from those of halogens?

## SECTION - B

**II** Answer any **SIX** questions. Each question carries **TEN** marks.

**(6X10=60)**

13. a) What are Silicones. Mention its uses. (5)  
b) Explain the difference between i) Absolute and Relative error. ii) Mean and Median. (5)
14. a) Describe the structure of diborane ( $B_2H_6$ ). Why is it considered an electron-deficient compound? (4)  
b) What are silicones? Describe their classification. (3)  
c) Discuss the electronegativity trends of alkali metals and alkaline earth metals across the group. (3)
15. a) Write the structure of  $XeF_4$  and mention the type of hybridization. (5)  
b) Give the preparation of  $XeF_6$ . Write its structure and mention any one property. (5)
16. a) What is lanthanide contraction? Mention any two of its consequences. (5)





- b) Explain the formation of interstitial compounds in transition metals. How does it affect their properties. (5)
17. a) Compare the relative stabilities of carbocations and carbanions. (5)
- b) Explain how hyperconjugation can affect the stability of carbocations and free radicals in detail. (5)
18. a) Derive an expression for the critical volume of a gas from Van der Waals' equation. (5)
- b) Calculate the average velocity of  $\text{CO}_2$  gas molecules at 310 K ( $R=8.314 \text{ J/K/mol}$ ,  $M_{\text{CO}_2}=44 \times 10^{-3} \text{ Kg}$ ) (5)
19. a) State Markonikov's rule and discuss its mechanism. (5)
- b) Classify carbides and give an example for each type. (5)
20. a) Give the reasons for the following properties of transition elements. (5)
- i) Form coloured compounds.
- ii) Exhibits variable oxidation states.
- b) How do you prepare alkenes by Wittig reaction. (5)

