



ST. FRANCIS DE SALES COLLEGE

A FRANSALIAN INSTITUTE OF HIGHER EDUCATION **AUTONOMOUS**

NAAC A GRADE • AFFILIATED TO BANGALORE UNIVERSITY • AICTE APPROVED • 2(F) & 12 (B) RECOGNITION OF UGC • ISO 9001:2015 CERTIFIED
Electronics City P.O., Bengaluru - 560 100, Karnataka, INDIA ☎ (+91) 8088140679 ✉ pro@sfscollege.in 🌐 www.sfscollege.in

END SEMESTER EXAMINATION – MAY 2025

CHEMISTRY - II SEMESTER BSC

24BSC25B – CHEMISTRY-II

Time: 3 Hours

Max Marks: 80

Instruction: Answer should be written completely in English

SECTION - A

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

(10X2=20)

1. Mention any two properties of ionic compounds.
2. Explain Saytzeff's rule with an example.
3. Calculate the bond order of carbon monoxide.
4. How lattice energy affects the solubility of an ionic crystal?
5. Mention the ortho and meta orienting groups of benzene.
6. What is an Elimination reaction? Give an example.
7. Explain Birch reduction with an example.
8. Write Schrodinger wave equation and indicate the terms involved.
9. Explain Phosphorescence.
10. Mention any two limitations of Freundlich adsorption isotherm.
11. Explain Bioluminescence.
12. Define auto catalysis and give an example.

SECTION - B

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

(6X10=60)

13. a) Draw the molecular orbital diagram of oxygen molecule and calculate the bond order. (5)
b) Mention the hybridization of the central atom in the following compounds i) BeCl_2
ii) PCl_5 (5)
14. a) Discuss the structure of ammonia molecule based on VSEPR theory. (5)
b) Explain sp^3 hybridization taking SiCl_4 as an example. (5)



15. a) Explain the electrical property of semi conductors based on band theory. (5)
b) Explain the shape of BrF_3 molecule based on VSEPR theory. (5)
16. a) What is SN^2 reaction? Discuss SN^2 mechanism taking Bromoethane as an example. (5)
b) Give the chemical equations for the following conversions. (5)
(i) Naphthalene to Phthalic anhydride (ii) Phenanthrene to Phenanthraquinone.
17. a) Write the values of all the four quantum numbers for 2S electron. (5)
b) Explain the significance of the terms (i) Hamiltonian operator (ii) Laplacian operator. (5)
18. a) Write the shapes of the orbital when $l=0$ and $l=1$. (5)
b) Explain Eigen values and Eigen functions in Quantum mechanics. (5)
19. a) Explain photosensitization. Give an example. (5)
b) Explain the mechanism of photo chemical decomposition of HI. (5)
20. a) A substance absorbs 3.4×10^{15} quanta of radiation per second. 0.001 mol of the substance undergoes a chemical reaction in 1300 seconds. Calculate the quantum efficiency. (5)
b) State and explain Huckel's rule of aromaticity, using cyclopentadienyl anion as an example. (5)

