QP Code: U25DIS011

Reg. No : ....
Name : ....

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

I SEMESTER (FYUGP) DEGREE EXAMINATIONS, NOVEMBER 2025

(Improvement/Supplementary)

CHE1MN100 : Inorganic Chemistry I

2024 Admission Only

(Credits: 4)

Time: 2 Hours **Maximum Marks: 70**

Section A

*Answer **all**. Each carries 3 Marks.* ***(Ceiling: 24 Marks)***

1. Explain systematic errors and random errors.
2. Differentiate the terms accuracy and precision with example.
3. Illustrate that F have lower electron affinity than Cl.
4. Second ionization enthalpy of Sodium is much greater than first ionization enthalpy. Justify.
5. How can dipole moment studies help to differentiate between ortho, meta and para dichlorobenzene?
6. Explain bottom up approach with example.
7. Define nanotechnology.
8. Discuss the applications of nanomaterials in solar cells.
9. Suggest the right indicator for the following titration.
   i) HCl aganist KOH
   ii) $H_2C_2O_4$ aganist NaOH
   iii) HNO_3 aganist Na_2CO_3
10. Suggest a suitable procedure for disposal of Sodium waste in the laboratory.

Section B

*Answer **all**. Each carries **6** Marks.* ***(Ceiling: 36 Marks)***

11. Discuss the difference between the terms constant errors and proportional errors.
12. A large anion favors an increase in covalent character in the bond. Justify.
13. Explain the bond order and magnetic behavior of N_2 molecule on the basis of MOT.

Turn Over

14. Summarize the important postulates of VSEPR theory.
15. Explain the term surface to volume ratio and its significance in deciding the properties of nanomaterials.
16. Discuss the applications of nanomaterials in removing dyes from industrial effluents.
17. Compare the relevance of R phrases and S phrases on the MSDS of chemicals.
18. Calculate the mole fraction of solute in a 1.5 molal aqueous solution of urea.

Section C

*Answer **any one**. Each carries **10** Marks.* ***(1x10=10marks)***

19. What are the postulates of molecular orbital theory? Construct energy level diagram for the electrons in Oxygen molecule and account for paramagnetic behavior.
20. (a) Discuss the theory of acid-base indicators.
    (b) Apply the principles regarding the choice of suitable indicators in different acid base titrations.

****