D 112271 (Pages : 2) Name.....

Reg. No.....

FIRST SEMESTER (CUFYUGP) DEGREE EXAMINATION
NOVEMBER 2024

Chemistry

CHE1CJ101—INORGANIC CHEMISTRY—I

(2024 Admission onwards)

Time : Two Hours Maximum : 70 Marks

Section A

All question can be answered.
Each question carries 3 *marks.*
(*Ceiling* : 24 *marks*).

1. Write Born-Lande equation and explain the terms used.
2. "Dipole moment of CCl_4 is zero" why ?
3. What are the factors affecting the formation of ionic compounds ?
4. Write some examples of nanomaterials in water purification with their mechanism of action.
5. What are the different types of nanomaterials used in solar cells ?
6. How do surface area to volume ratio of nano materials influence their properties ?
7. What are the key steps in providing first aid for electric shock ?
8. How would you use a fire extinguisher to put out fire in the laboratory ?
9. What are the health effects of inhaling poisonous gases ?
10. Distinguish between molarity and molality.

Turn over

Section B

All question can be answered.
Each question carries 6 *marks.*
(*Ceiling* : 36 *marks*).

11. Explain three fundamental points of Fajans rule with examples.
12. "Oxygen molecule is paramagnetic but not nitrogen molecule". Explain with MO diagram.
13. How many lone pairs and bond pairs are present in XeO_3 ? Justify your answer with hybridization.
14. How can we minimize measurement errors?
15. Explain different types of errors.
16. What are the methods of representing precision ?
17. How are nanomaterials used in the removal of dyes from waste water ?
18. What are novel properties of nanomaterials that are not seen in bulk materials ?

Section C

Answer any **one** *questions. Each question carries* 10 *marks.* (1 × 10 = 10 marks)

19. You are working with a new chemical in the lab. How do you use MSDS to ensure safe handling ?
20. Discuss the hybridization and shape of ClF_3, BrF_5, and SF_4.