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S – 2700

Reg. No. :

Name :

First Semester B.Sc. Degree Examination, January 2024

First Degree Programme under CBCSS

Chemistry

Core Course

CH 1141 : INORGANIC CHEMISTRY I

(2020 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries **1** mark.

1. State Aufbau principle.
2. Explain the term diagonal relationship.
3. How will you distinguish barium and calcium salts by using flame test?
4. Mention any two oxyacids of chlorine.
5. Which is the conjugate base of HF?
6. Give the limitations of Lux Flood concepts of acids and bases.
7. What is effective nuclear charge?
8. Which is the gas causing photochemical smog?
9. How activated charcoal is useful in waste water treatment?
10. What does RRR stand for in waste management?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer any **eight** questions. Each question carries **2** marks.

11. What is meant by green house effect?
12. A cricket ball weighing 100 g is to be located within $0.1\text{\AA}$. What is the uncertainty in its velocity?
13. State and explain Pauli's exclusion principle.
14. What is electron affinity? How it varies in a period?
15. Explain why lower oxidation states are more stable heavier atoms.
16. What do you mean by allotropism? Give examples.
17. What stands for plastic identification codes number 2 and number 6?
18. Mention any two general properties of non aqueous solvents.
19. Explain the Lewis concept of acid and bases with one example each.
20. Give de-Broglie equation and explain the terms.
21. What are the causes and consequences of eutrophication?
22. Explain why alkali metal solutions in liquid ammonia are coloured.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks.

23. Discuss Pauling's scale and Mulliken scale of electronegativity.
24. Discuss the applications of Slater's rule.
25. Explain the terms levelling solvents and differentiating solvents.

26. What are ortho and para hydrogens? Comment on 'hydrogen as next generation fuel'.
27. Explain Lowery-Bronsted concepts of acids and bases with examples.
28. Discuss the applications of metal ions in X-ray and photovoltaic cell.
29. What are the harmful effects of fire works?
30. Write short note on different environmental movements.
31. What is electro dialysis? Discuss its application in water treatment.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks.

32. (a) Explain Rutherford's nuclear model of atoms. What are its limitations?
(b) Discuss the Davisson and Germer's experiment, verification of wave nature of electrons.
33. (a) Discuss the trend in the following aspects of p-block elements in a group and in a period.
(i) Atomic radii and ionization enthalpy
(ii) Electronegativity
- (b) Discuss the thermal stabilities of alkaline metal oxides and hydrides.
34. Write an essay on HSAB principle and its applications.
35. Write short notes on
(a) Soil pollution
(b) Water quality parameters.

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(2 × 15 = 30 Marks)