SAINTS COLLEGE

(Pages : 4) **N – 3997**

Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, June 2022

First Degree Programme under CBCSS

Chemistry

Core Course I

CH 1141 — INORGANIC CHEMISTRY – I

(2020 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Answer **all** questions in **one** word/**one** sentence. Each question carries **1** mark)

1. Rutherford's model of atom was modified by N. Bohr by applying ————
2. Give two examples of biodegradable plastics.
3. Solvents which can donate as well as accept a proton are referred to as ———— solvents.
4. 1s orbital has ———— nodes.
5. The radioactive isotope of hydrogen is ————
6. The alkaline earth metal with highest first IE is ————
7. Give an example for ammono acid and ammono base.
8. Among group 2 elements ———— will not directly react with hydrogen.
9. What is global warming potential of CO_2?
10. The hybridization of carbon in diamond is ————

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

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

11. State and explain de Broglie relation.

12. The first IE of Be is greater than that of Li. But the case is reversed in the case of second IE. Give reason.

13. Define Lux-Flood concept of acids and bases with examples.

14. What is greenhouse effect? Name two greenhouse gases.

15. How does the electropositive character vary among the alkaline earth metals? Justify the variation.

16. Mention any two adverse effects of plastic materials to soil.

17. Graphite is used as a dry lubricant in machines. Why?

18. Give any two applications of HSAB principle.

19. Write the time independent Schrodinger equation and explain the terms.

20. State and explain Aufbau principle. Write Aufbau order of energy levels.

21. Distinguish between persistent and non-persistent pollutants with examples.

22. Distinguish between an orbit and an orbital.

23. Which is more stable in aqueous solution? $T1^{+}$ or $T1^{3+}$. Justify your answer.

24. How do industrial effluents pollute water?

25. Arrange HClO, $HClO_2$, $HClO_3$, $HClO_4$ in the increasing the order of acidic strength. Give reason.

26. Explain the high conductivity exhibited by a solution of an alkali metal in liquid ammonia.

(8 × 2 = 16 Marks)

SECTION – C

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

27. Discuss the Hund's rule of maximum multiplicity with a suitable illustrative example.

28. Distinguish between matter waves and electromagnetic waves.

29. Differentiate between levelling solvents and differentiating solvents with example.

30. Explain the extra stability associated with half filled and completely filled electronic configurations.

31. Discuss the anomalous behaviour of Be among alkaline earth metals.

32. Write a short note on the Plachimada movement.

33. Explain the note of Se in Xerography.

34. Write a note on allotropes of sulphur.

35. What is meant by eutrophication? What are its adverse consequences?

36. Discuss the impacts of stratospheric ozone depletion.

37. What is Smog? Explain the adverse effects caused by Smog?

38. What are Quantum Number?

(6 × 4 = 24 Marks)

SECTION – D

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

39. Discuss briefly :
    (a) Arrhenius concept,
    (b) Lowry Bronsted concept and
    (c) Lewis concept of acids and bases and their limitations. **5+5+5**

40. Explain the water quality parameters represented by DO, ROD, COD in detail. **5+5+5**

41. Briefly discuss the reactions in liquid HF. **15**

42. Describe :

    (a) Rutherford model of atom and its limitations.

    (b) Bohr theory of atom and its limitations. **7.5 +7.5**

43. Discuss the term plastic pollution, the associated adverse effects and its control measures. **5+5+5**

44. Briefly discuss :

    (a) About different scales of electronegativity.

    (b) Diagonal relationship with a suitable example. **10+5**

(2 × 15 = 30 Marks)
