

22U114

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Name: .....

Reg.No: .....

**FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2022**

(CBCSS - UG)

(Regular/Supplementary/Improvement)

**CC19U CHE1 B01 - THEORETICAL AND INORGANIC CHEMISTRY-I**

(Chemistry - Core Course)

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 2

**Part A (Short answer questions)**

Answer *all* questions. Each question carries 2 marks.

1. Any scientific hypothesis is falsifiable. What does this statement mean?
2. What is meant by experimental bias?
3. Discuss the meaning of the term most probable value related to an analytical result.
4. Define equivalent mass of a salt. What is the equivalent mass of sodium chloride?
5. What is meant by a standard solution?
6. Name two metal ion indicators.
7. Arrange the following atoms in the increasing order of electron affinity: N, O, F, Cl.
8. State how the polarizability of anions vary along a period.
9. What is hydroboration? Give an example.
10. Draw the structure of NO<sub>2</sub>.
11. Explain the terms Usanovich acid and Usanovich base through examples.
12. What is meant by a radioactive tracer?

**(Ceiling: 20 Marks)**

**Part B (Short essay questions - Paragraph)**

Answer *all* questions. Each question carries 5 marks.

13. Logically differentiate between the terms science and pseudoscience.
14. Explain the use of anhydrous calcium chloride in laboratory desiccators.
15. Explain the principle of the double burette method used in titrimetry with a suitable example.
16. Explain the terms screening effect and effective nuclear charge.

17. Which is more stable in aqueous solution  $Tl^+$  or  $Tl^{3+}$ ? Justify your answer.
18. What are the conditions which favour ion polarisation?
19. A radioactive material disintegrates to 25% of its initial activity in 1 hour. Calculate its decay constant.

**(Ceiling: 30 Marks)**

**Part C (Essay questions)**

Answer any *one* question. The question carries 10 marks.

20. Discuss the safe laboratory practices.
21. Discuss how dipole moment studies are helpful in elucidating molecular structure.

**(1 × 10 = 10 Marks)**

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