23U116 (Pages: 2) Name: .....

Reg.No: .....

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2023

(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. What are known as physical sciences?
2. What are the main objectives of scientific research ?
3. Mention two important points with regard to safe storage of laboratory chemicals.
4. What is meant by the term coefficient of variation with regard to comparison of analytical results ?
5. Give the structural formula of EDTA.
6. Give two advantages of double burette method of titration
7. Explain how the magnitude of screening effect of inner electrons affects ionization enthalpy.
8. What will be effective nuclear charge felt by a d electron of Cr (Atomic no. 24)?
9. Mention two points of similarity in behaviour between Li and Mg.
10. How is diborane converted to boron nitride ?
11. What are the general characteristics of a hard acid?
12. Explain one use of radioisotopes in medical diagnosis.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

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

13. Differentiate between the terms scientific evidence and a scientific proof.
14. Distinguish between the terms molarity, normality and molality.
15. What are the characteristics that a primary standard should possess ?

16. Give the Slater Rules for calculating the shielding constant. How is effective nuclear charge related to the screening constant ?

17. Of cis and trans 1,2-dichloroethenes, which has zero dipole moment? Why?

18. Explain the action of copper with nitric acid under different concentration conditions

19. State and illustrate the group displacement law.

(Ceiling: 30 Marks)

Part C (Essay questions)

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

20. Explain the simple first-aid procedures that have to be administered to victims if they suffer burns from heat, acids, alkalis, phenol and bromine.

21. What is Born-Haber cycle? Discuss with respect to NaCl.

(1 × 10 = 10 Marks)

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