K24U 1608

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree (CBCSS – OBE-Regular/Supplementary/ Improvement) Examination, April 2024
(2019 Admission Onwards)
CORE COURSE IN CHEMISTRY
2B03CHE : Analytical and Inorganic Chemistry – 1

Max. Marks : 40

Time : 3 Hours

Instruction *: Answer the questions in* ***English only.***

SECTION – A

Very short answer type. **Each** carries **1** mark. Answer **all 4** questions.

1. Define standard deviation.
2. What is meant by normality of a solution ?
3. State Arrhenius concept of acid and base.
4. Define inert pair effect. **(4×1=4)**

SECTION – B

Short answer type. **Each** carries **2** marks. Answer **any 7** questions out of 10.

5. What are the ways to reduce systematic errors ?
6. Differentiate between precision and accuracy.
7. What are alkali metals ? Why are they so called ?
8. Arrange the following compounds in the increasing order of solubility in water. Explain why.
   NaOH, LiOH, RbOH, KOH, CsOH.
9. Explain with possible reasons how the atomic size of the elements in group 15 of the periodic table varies from top to bottom.
10. Explain the Flood concept of acid and base with a suitable example. **P.T.O.**

11. Briefly explain permaganometric titrations.
12. What is meant by acid-base indicator ? Give example for each.
13. Write down the elimination of interfering acid radicals, oxalate and fluoride.
14. What are the characteristic properties of solvent ? **(7×2=14)**

SECTION – C

Short essay type. **Each** carries **3** marks. Answer **any 4** questions out of 6.

15. Explain complexometric titration using EDTA as an example.
16. Write a note on errors.
17. What are hydrides ? Explain their classification.
18. Write a brief note on oxoacids of sulphur.
19. Describe the role of HF as a solvent.
20. Explain how the relative strength of acids is compared. If A B C are the three acids with dissociation constants 1.8×10^{-5}, 4.6×10^{-4} and 1.2×10^{-2} respectively. Arrange the following in the increasing order of the acid strength. **(4×3=12)**

SECTION – D

Long essay type. **Each** carries **5** marks. Answer **any 2** questions out of 4.

21. A) Explain the student T-test, F-test and Q-test.
    B) Calculate the standard deviation and relative standard deviation of the following measurements, 51.3, 55.6, 49.9 and 52.0.
22. Give a brief account of the oxide, halides hydrides and carbonates of alkaline earth metals.
23. Explain the exceptional behaviour of second-period elements in group 13 and group 14.
24. Briefly explain the HSAB principle and applications. **(2×5=10)**
