Reg. No. : .	
20	270
Name :	

II Semester B.Sc. Degree (CBCSS - OBE - Regular/Supplementary/ Improvement) Examination, April 2023 (2019 Admission Onwards) CORE COURSE IN CHEMISTRY

2B03CHE: Analytical and Inorganic Chemistry - I

Time: 3 Hours

Max. Marks: 40

Instruction: Answer the questions in English only.

## SECTION - A

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

- 1. How many significant figures are present in the measurement of 0.0020 kg of a substance?
- 2. Define Molality of a solution. 3. Arrange the following compounds in the increasing order of their solubility in
- water. NaOH, LiOH, RbOH, KOH, CsOH.
- 4. Give one example each for an acid and a base according to the Lux-Flood concept.  $(4 \times 1 = 4)$

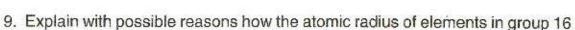
## SECTION - B

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

- 5. Differentiate between precision and accuracy.
- 6. What do you mean by confidence limit of a measurement?
- 7. What are alkaline earth metals? Why are they so called? 8. Explain inert-pair effect with an example.

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of the periodic table of elements varies from top to bottom. Describe Lewis concept of acid and base with suitable examples.

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- 11. What is meant by redox indicator? Give an example each for internal and
- external redox indicators. 12. What do you mean by primary standard? Give an example each of a base
- and an acid that are primary standards. 13. Define common ion effect. How is it applied to selectively precipitate Al as its
- hydroxide in the presence of Zn? Explain leveling effect of solvents.  $(7 \times 2 = 14)$ 
  - SECTION C

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

The following set of chloride determinations on separate aliquots of a pooled serum were reported: 103, 106, 107 and 114 meg/L. One value appears

- suspect. Explain how you will determine whether this value can be rejected, at the 95% confidence level. The tabulated Q value for four observations is 0.829 for 95% confidence level. Explain complexometric titration taking EDTA as an example. 17. What are the important isotopes of hydrogen? Explain ortho and para
- hydrogen. Write a brief note on the oxoacids of nitrogen.
- Describe the use of liquid ammonia as a non-aqueous solvent.

20. Explain how the relative strength of acids are compared. If A, B and C are

 $1.2 \times 10^{-2}$  respectively, arrange them in the increasing order of acid

three acids with acid dissociation constants  $(K_a)$  1.8  $\times$ 10<sup>-5</sup>, 4.6  $\times$ 10<sup>-4</sup> and

 $(4 \times 3 = 12)$ 

21. a) Explain standard deviation and relative standard deviation in a measurement.

strength.

22. Give a brief account of the oxides, halides and hydrides of alkali metals. Account

exceptional behaviour. Illustrate and explain the reason for this behaviour.

SECTION - D

 $(2 \times 5 = 10)$ 

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b) Calculate the average, standard deviation and relative standard deviation of the following 4 measurements 51.3, 55.6, 49.9 and 52.0.

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

- for the formation of different type of oxides by different alkali metals. 23. In the p-block of the periodic table elements in the second period show

24. Briefly explain HSAB principle and its applications.