

B.M.S. COLLEGE FOR WOMEN AUTONOMOUS
BENGALURU-560004

SEMESTER EXAMINATION-APRIL/MAY- 2023

M.Sc. in Chemistry-I Semester

Analytical Chemistry-I

Course code: MCH104T

Time: 3 hrs

QP Code: 11010

Max.Marks:70

Instruction: Answer Question No.1 and any FIVE of the remaining.

1. Answer any *TEN* questions (10x2=20)
- a) Mention the method of handling liquid bromine.
 - b) Differentiate between flammable liquids and combustible liquids?
 - c) Differentiate between absolute and relative error.
 - d) Mention the importance of nucleation step in precipitation.
 - e) Why is it impossible to titrate all three protons of phosphoric acid in aqueous medium?
 - f) What are masking agents? Give an example.
 - g) Define the term limit of quantification?
 - h) Differentiate single beam and double beam spectrophotometers.
 - i) Write a note on electromagnetic spectrum.
 - j) Relate the theoretical plate and column efficiency.
 - k) What is Nernst distribution Law?
 - l) How SCFC is superior to HPLC and GC?
- 2 a) How spilled mercury can be cleaned up?
- b) Explain why dry ice or liquid nitrogen mixtures should not be poured into the sink?
 - c) In the analysis of calcium the following values were obtained 15.42, 15.56, 15.68, 15.51, 15.52, 15.53, 15.54, 15.53, 15.56. State which values are acceptable and which can be rejected. (4+3+3=10)
3. a) Write a short note on metal ion indicators.
- b) Discuss the application of EDTA titration in the determination of mixture of ions. (5+5=10)
4. a) Explain the following i) Beer Lambert's Law ii) Molar absorptivity iii) Sandell's sensitivity
- b) A solution of chemical 'A' having its 0.14 molL^{-1} concentration has an absorbance of 0.42. Another solution of 'A' under the same conditions has an absorbance of 0.36.

What is the concentration of this solution of 'A'?

(6+4=10)

5. a) Explain how paper chromatography is useful in the separation of aminoacids
b) Explain briefly the instrumentation of HPLC with schematic representation. **(5+5=10)**
6. a) Discuss the titration curve for weak acid VS strong base. Comment on the indicators used.
b) Compare standard addition and internal standard addition method. **(5+5 =10)**
7. a) Discuss the principle and working of gas chromatography
b) How are lanthanides and actinides separated by ion exchange chromatography? Explain **(6+4=10)**
8. a) Differentiate co-precipitation and post precipitation in gravimetric analysis.
b) Discuss continuous solvent extraction with an example
c) Write a note on Ringbom's plot. **(4+3+3=10)**