

(q) Explain how Cd and Zn can be separated on anion exchanger. 5

(r) A certain system has a distribution ratio of 50. Find out the weight extracted by (i) 100 ml of organic solvent in one extraction and (ii) 25 ml of organic solvent with four extractions. (Given volume of aqueous layer = 100 ml, weight of solute 500 mg). 6

4. (a) Compare the techniques of paper and thin layer chromatography. 5
 (b) Explain the instrumentation involved in capillary electrophoresis technique. 5
 (c) State and explain van Deemter equation. 6

OR

- (p) Explain-Retention time and resolution. 5
 (q) Explain how column chromatographic analysis is carried out. 5
 (r) Explain HPTLC in detail. 6
5. (a) What is HPLC ? Give its instrumentation and applications. 6

AQ - 870

First Semester M. Sc. (Part - I) (CBCS - Pattern)
 Examination

PHARMACEUTICAL CHEMISTRY

Paper - 1 SA - 4
 (General Analytical Chemistry)

P. Pages : 5

Time : Three Hours]

[Max. Marks : 80

Note : (1) All questions are compulsory.
 (2) Use of calculator/log table is permitted.

1. (a) What is meant by error ? Explain how the errors can be minimised. 5
 (b) What is the criterion for selecting a method of analysis ? Explain how validation of a method is done. 5
 (c) Vitamin B₂ is determined in a sample by fluorescence intensity in 5% acetic acid solution. Obtain equation of calibration graph from following data.

Vitamin B ₂ ($\mu\text{g/mL}$)	Intensity
0.100	5.8
0.200	12.0

Countd.

Vitamin B ₂ ($\mu\text{g/mL}$)	Intensity
0.300	17.2
0.400	23.8
0.800	45.4

6

OR

- (p) Define and explain the following terms :
- Accuracy
 - Limit of quantitation
 - Robustness. 6
- (q) Explain the methods of dissolution for different types of samples. 5
- (r) What are the characteristics of a quality assurance unit ? 5
2. (a) Give the classification of volumetric methods of analysis with one example of each. 6
- (b) Explain the role of iodine as redox agent in redox titrations with suitable example. 5
- (c) Explain the theory of acid-base indicators. 5

OR

- (p) What do you mean by stoichiometry ? Calculate the normality of Na_2CO_3 solution containing 5.3g/500 ml of the solution. 6
- (q) Explain Volhard's titration. Also write the reactions involved. 5
- (r) What are complexometric titration ? Explain with suitable example. Also give the name of indicator used in the titration. 5
3. (a) Explain the extraction of metals by organic reagents with suitable examples. 5
- (b) Draw the schematic structures of cation and anion exchange resins. Also define ion exchange capacity of a resin. 5
- (c) A certain metal is 70% extracted from 9 M HCl into an equal volume of organic solvent. What percentage will remain unextracted after three individual extractions by the same solvent ? 6

OR

- (p) How does solid phase extraction differ from solvent extraction ? 5

- (b) Describe various types of sample injection method in GC. 5
- (c) Explain the factors affecting ion exchange equilibrium. 5

OR

- (p) Explain-Normal phase chromatography and reversed phase chromatography. 5
- (q) Compare the techniques of GC and HPLC. 5
- (r) Draw a neat diagram of sample loop injector used in HPLC and explain its working. 6



