AU–289

M.Sc. (Part–I) Semester–I (C.B.C.S. Scheme) Examination

PHARMACEUTICAL CHEMISTRY

(General Analytical Chemistry)

Paper–1 SA 4

Time : Three Hours] [Maximum Marks : 80

Note :— (1) All questions are compulsory and carry equal marks.

(2) Use of calculator is allowed.

UNIT–I

1. (a) Calculate the standard deviation for the following data obtained by analysis of drug :

Sample	1	2	3	4	5	6
% Drug	2.30	6.5	8.5	7.8	10.9	4.8

6

(b) Define the terms accuracy and precision. How do they differ from each other ? Explain with example. 5

(c) Explain safety in analytical laboratory. 5

OR

(p) Write in brief :

(i) Calibration and detection limit

(ii) Proficiency testing. 6

(q) Describe any one test for the rejection of analytical data. 5

(r) What is sampling ? Explain the various methods used for sampling. 5

UNIT–II

2. (a) What are fluorescent indicators used in acid-base titrations ? Explain. 5

(b) What is co-precipitation ? How is it different from post precipitation ? Explain. 5

(c) Discuss the use of iodine as redox reagent and role of starch as redox indicator in redox titration. 6

OR

(p) Describe the various steps involved in gravimetric analysis. 6

(q) Explain Fajans-titration. Give its applications. 5

(r) Explain the following types of titrations with suitable example :

(a) Strong acid vs strong base

(b) Strong acid vs weak base. 5

UNIT–III

3. (a) What is solvent extraction ? Discuss the factors favouring solvent extraction. 6

(b) Write brief notes on synthetic ion exchangers. 5

(c) Write various steps of operations involved in solid phase extraction. 5

OR

(p) If 200 mg of solute is dissolved in 100 ml of distilled water and extracted with 100 ml of organic solvent in one step and same with 50 ml of organic solvent in two steps then find amount of solute extracted in each step (Given k_D = 10 mol-wt of soulte 71 g mol^{-1}). 5

(q) Describe some of the factors that affect the selectivity of ion exchange resins. 6

(r) Write note on solid phase micro extraction. 5

UNIT–IV

4. (a) What is chromatography ? Give the classification of chromatographic techniques. 6

(b) Write note on electrophoresis. 5

(c) Explain the relationship between retention time and partition coefficient. 5

OR

(p) Give the principle of thin layer chromatography. 5

(q) What is capillary electrophoresis ? Explain its instrumentation techniques. 5

(r) Explain column chromatography with suitable example. 6

UNIT–V

5. (a) Explain the following terms in gas chromatography :

(i) Retention ratio

(ii) Retention volume

(iii) Retention time. 6

(b) Explain size exclusion chromatography. 5

(c) Describe the separation of anions and cations by ion chromatography method. 5

OR

(p) Give the applications of gas chromatography. 5

(q) What do you understand by the term resolution and evaluation in HPLC ? Explain. 5

(r) Explain the detectors used in gas chromatography. 6

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