



GD-611

M.Sc. 3rd Semester
Examination, Dec.-Jan., 2022-23

CHEMISTRY

Paper - IV

Analytical Techniques and Data Analysis

Time : Three Hours] [Maximum Marks : 80
[Minimum Pass Marks : 16

Note : Answer all questions. The figures in the right-hand margin indicate marks.

Unit-I

1. (a) Explain enzymatic and microwave digestion for the liquid and solid materials. 10
- (b) Write a note on preservation and preparation of sample. Give a brief discussion of sampling technique used for gaseous sample. 10

OR

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(Turn Over)

(2)

- (a) Explain the terms 'Precision' and 'Accuracy' giving appropriate examples. 10
- (b) Describe the following : 10
- (i) Normal distribution curve
- (ii) Confidence limit

Unit-II

2. (a) Describe the basic principle and important applications of solvent extraction. 10
- (b) Explain the technical details of paper chromatography along with applications. 10

OR

- (a) Give the details of following techniques : 10
- (i) Column chromatography
- (ii) Gas chromatography
- (b) Write principle and classification of chromatography. 10

Unit-III

3. (a) Discuss the principle, instrumentation and applications of TGA. 10
- (b) What do you understand by the term "Automated methods"? Describe the basic principle involved in these. 10

OR

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(Continued)

(3)

- (a) Explain principle, instrumentation and applications of DSC method. 10
- (b) Describe flow injection analysis. 10

Unit-IV

- 4. (a) Discuss the principle and instrumentation of coulometry. 10
- (b) Explain Amperometric titration on the basis of titration between Pb^{2+} and SO_4^{2-} . 10

OR

- (a) What do you understand by the term 'cell constant' in reference with the conductivity measurements? Describe the conductivity determination method. 10
- (b) Write the details of: 10
 - (i) Ilkovic equation
 - (ii) Qualitative analysis stripping methods