

M.Sc.(Chem.) Semester - 2 (CBCS) Examination
March/April – 2025 (As Per Syllabus Year-2023)
Analytical Chemistry (Core)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1(A) Answer the following question. (04)

- (1) What is Limit of Detection (LOD)?
- (2) Name the various method validation parameters.

Que-1(B) Answer any two questions out of three. (10)

- (1) Define Precision and calculate % RSD for following Intra-day precision data

Replicate	Area Under Curve (AUC)
1	1124
2	1168
3	1200
4	1199
5	1109
6	1099

- (2) Calculate r^2 Value for given linearity study data.

Concentration ($\mu\text{g/mL}$)	Mean Area
3	33
6	61
9	89
12	125
15	141
18	175
21	201

- (3) Define error, explain types of errors and discuss measures to minimize the errors in analysis.

Que-2(A) Answer the following question. (04)

- (1) Introduce Geographical Indication with at-least four examples.

Que-2(B) Answer any two questions out of three. (10)

- (1) What is IPR? Explain its types in brief.
- (2) Introduce Copyright Law and state classes of works for which copyright protection is available
- (3) Define and briefly introduce “*Patent*” and list out the inventions which are non-patentable in India.

Que-3(A) Answer the following question. (04)

- (1) Give the method and reaction for limit test of Iron.
- (2) Draw the chart for Biopharmaceutical Classification System (BCS).

Que-3(B) Answer any two questions out of three. (10)

- (1) Give the principle, Reaction, procedure and applications of Karl Fischer titration.
- (2) What is Dissolution Study? Name the types of dissolution apparatus and state purpose of dissolution studies.
- (3) Discuss the process to determine % Loss on Drying (LOD) in given API sample.

- Que-4(A) Answer the following question. (04)**
(1) What is Petroleum? Name any one method of petroleum refining.
(2) What is Octane Number? What it Indicates?
- Que-4(B) Answer any two questions out of three. (10)**
(1) Describe the importance and working of Viscosity index improvers.
(2) Explain the test methods used to determine flash and fire points.
(3) Explain the determination of Aniline point and its importance in fuel testing.
- Que-5(A) Answer the following question. (04)**
(1) List out major parameters of (i) soil analysis and (ii) water analysis.
- Que-5(B) Answer any two questions out of three. (10)**
(1) Discuss process to determine Alkalinity of given water sample.
(2) Write a note on estimation of COD (Chemical Oxygen Demand) of given water sample.
(3) How will you determine organic carbon from given soli sample?
