

Seat No.:

No. of Printed Pages: 01



A Charutar Vidya Mandal's Institution
V.P. & R.P.T.P. SCIENCE COLLEGE
(AUTONOMOUS) (Grant-in-Aid)
Affiliated to Sardar Patel University
VALLABH VIDYANAGAR-388120



Bachelor of Science (Semester IV) Internal Theory Examination March- 2026

US04MAICH02: ANALYTICAL CHEMISTRY

Date: 09/03/2026, Monday

Time: 02:45 PM to 04:15 PM

Total Marks: 30

Note: Figures to the right indicate full marks.

Q-1 Write the most appropriate answer from the following multiple-choice questions. [6]

1. Complexometric titrations are useful for the determination of...
(a) Organic compounds (c) Gases
(b) Metal ions (d) Acids
2. Iodometric titrations are classified as...
(a) Acid-base titrations (c) Precipitation titrations
(b) Complexometric titrations (d) Redox titrations
3. Which indicator is used in Fajan's method?
(a) Potassium chromate (K_2CrO_4) (c) Fluorescein
(b) Ferric chloride ($FeCl_3$) (d) Phenolphthalein
4. The main purpose of washing the precipitate in gravimetric analysis is to...
(a) Increase the mass of precipitate (c) Dissolve the precipitate
(b) Remove impurities and adhering ions (d) Change the chemical composition
5. The glass electrode is commonly used for the measurement of...
(a) Conductivity (c) pH
(b) Turbidity (d) Dissolved oxygen
6. A compound travels 3.5 cm while the solvent front travels 7.0 cm in TLC. The R_f value is:
(a) 0.25 (c) 0.75
(b) 0.50 (d) 1.00



Q-2 Discuss the role of starch in titrations involving iodine. [6]

OR

Q-2 Write a note on the method for determination of total hardness of water samples. [6]

Q-3 Discuss Mohr's method in detail. [6]

OR

Q-3 Differentiate between lyophobic colloid and lyophilic colloid. [6]

Q-4 Write a note on the Quinhydrone electrode. [6]

OR

Q-4 What is pH? Explain the Operational definition of pH. [6]

Q-5 Discuss the paper chromatography in detail. [6]

OR

Q-5 Write a note on gas chromatography (GC). [6]

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Supervisor sign.

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Bachelor of Science (Semester IV) Quiz - 2026
US04MAICH02: ANALYTICAL CHEMISTRY

Date: 09/03/2026, Monday
Time: 20 minutes

Total Marks: 15

Q-1 Fill in the blanks with appropriate answer given in the bracket.

[08]

1. In complexometric titrations, EDTA forms a with metal ions.
(1:1 complex / 2:1 complex)
2. The endpoint in iodometric titrations is often detected using as an indicator.
(methyl orange / starch)
3. In Mohr's method, acts as an indicator for chloride titration. (Fe^{3+} / CrO_4^{2-})
4. Lyophobic colloids require to prevent coagulation. (stabilizers / indicators)
5. A conductometer measures the of a solution.
(electrical conductivity / pH)
6. A pH meter measures the concentration of a solution.
(hydrogen ion / hydroxide ion)
7. The carries the solute in chromatography. (stationary phase / mobile phase)
8. The R_f value in chromatography is always between (0 and 1 / 1 and 2)

Q-2 Whether the following statement is true or false. Write your answer in the box.

[07]

1. An oxidizing agent is a substance that loses electrons, whereas a reducing agent is a substance that gains electrons. []
2. Eriochrome Black T (EBT) indicator is commonly used for the determination of calcium and magnesium ions. []
3. In Volhard's method, chromate ion (CrO_4^{2-}) is used as the indicator for titration. []
4. Lyophilic colloids do not require stabilizers and are generally more stable than lyophobic colloids. []
5. A quinhydrone electrode measures the concentration of Helium ions in a solution. []
6. The pattern obtained on paper in paper chromatography is called a chromatogram. []
7. The R_f value is calculated as the ratio of the distance travelled by the solute to the distance travelled by the solvent. []