

Seat No.:

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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 -4) External Examination March- 2026

US04MAICH02: ANALYTICAL CHEMISTRY

Date: 25/03/2026, Wednesday
Time: 01:45 PM to 04:15 PM

Total Marks: 50

Note: Figures to the right indicate full marks.

Q-1 Write the most appropriate answer from the following multiple-choice questions. [10]

- In iodine titration, starch is used as...
 - Catalyst
 - Indicator
 - Buffer
 - Reducing agent
- Which compounds cause permanent hardness of water?
 - $\text{Ca}(\text{HCO}_3)_2$
 - $\text{Mg}(\text{HCO}_3)_2$
 - CaSO_4 and MgSO_4
 - NaHCO_3
- Which ion is determined by Mohr's method?
 - Chlorine
 - Sulfate
 - Calcium
 - Magnesium
- Which indicator is used in Volhard's method?
 - Starch
 - Potassium chromate
 - Ferric ion
 - Methyl orange
- Drying or ignition of precipitate is done to...
 - Remove moisture
 - Increase volume
 - Increase solubility
 - Change color
- Glass electrode is used to measure...
 - Conductivity
 - Pressure
 - Temperature
 - pH
- What happens to equivalent conductance when dilution increases?
 - Decreases
 - Increases
 - Remains constant
 - Becomes zero
- The value used to identify compounds in TLC is...
 - pH value
 - R_f value
 - Density
 - Boiling point
- Column chromatography separates compounds based on...
 - Pressure
 - Temperature
 - Density
 - Adsorption
- Which phase acts as the mobile phase in gas chromatography?
 - Liquid
 - Solid
 - Gel
 - Gas



- Q-2 (A) Discuss the method used for detection of the end point in an iodine solution. [5]
(B) Discuss the method for determination of total hardness of a water samples. [5]
OR
- Q-2 (A) Write a note on the different types of EDTA titrations. [5]
(B) Discuss the requirements of metal ion indicators used in complexometric titrations. [5]
- Q-3 (A) Write a note on Mohr's method used in precipitation titration. [5]
(B) Write a note on the adsorption indicator method. [5]
OR
- Q-3 (A) Discuss precipitation method for gravimetric analysis and factors affecting it. [5]
(B) Discuss the process of washing the precipitate in gravimetric analysis. [5]
- Q-4 (A) Describe equivalent conductance and molecular conductance. [5]
(B) Write a note on the Quinhydrone electrode. [5]
OR
- Q-4 (A) Write a note on the hydrogen electrode. [5]
(B) What is pH? Explain the operational definition of pH. [5]
- Q-5 Draw the schematic diagram of Gas Chromatography (GC) and explain its main parts. [10]
OR
- Q-5 Draw the schematic diagram of High Performance Liquid Chromatography (HPLC) and explain its main parts. [10]

