

Duration: 3 Hrs

Total marks: 75

- N.B.: 1. All questions are compulsory
2. Figures to right indicate full marks

Q. I Choose appropriate option for the following multiple choice-based questions. 20

- 1 What is a measure of precision of the analytical measurements?
 - a. Standard deviation
 - b. Absolute error
 - c. Mean absolute error
 - d. Mean

- 2 Failure to read the meniscus correctly on a burette is _____ error.
 - a. Instrumental
 - b. Personal
 - c. Reagent
 - d. Method

- 3 The number of moles of solute dissolved per 1000 g (1kg) of solvent is known as _____.
 - a. Molarity
 - b. Normality
 - c. Molality
 - d. Equivalent weight

- 4 Starch forms _____ color complex with _____.
 - a. Colorless, sodium thiosulphate
 - b. Colorless, iodine
 - c. Blue, iodine
 - d. Blue, sodium thiosulphate

- 5 Most common titrant used in alkalimetric non aqueous titration is _____.
 - a. Sodium methoxide
 - b. Perchloric acid
 - c. Glacial acetic acid
 - d. Anhydrous sulfuric acid

- 6 The conductance of the body of uniform length and uniform area of cross section is called as _____.
 - a. Molar conductance
 - b. Specific conductance
 - c. Conductance
 - d. Equivalent conductance

- 7 The indicator preferred in the titration of strong acid and weak base is -----.
- Phenolphthalein
 - Methyl orange
 - Ferriin
 - Mordant black II
- 8 Ceric ammonium sulphate acts as _____ in acidic medium.
- Strong Reducing agent
 - Strong oxidizing agent
 - Strong complexometric acid
 - Strong precipitating agent
- 9 Which among the following is an example of secondary standard?
- Sodium carbonate
 - Zinc metal
 - Potassium hydrogen phthalate
 - Sodium hydroxide
- 10 According to Ostwald theory of indicators, methyl orange in acidic medium is ---
_____ and shows _____ color.
- Unionized, red
 - Ionized, red
 - Unionized, yellow
 - Ionized, yellow
- 11 Sodium chloride I.P. is assayed by _____ method.
- Mohr's method
 - Volhard's method
 - Fajan's method
 - Modified Volhard's method
- 12 Which method is the oldest titration method in precipitation titrations?
- Mohr's method
 - Fajan's method
 - Volhard's method
 - Non-precipitation method
- 13 Polarogram of solution containing electro reducible substance is obtained by plotting _____.
- Current Vs voltage
 - Current Vs potential
 - Resistance Vs time
 - d Potential Vs Volume

- 14 Which of the following analyte can be analyzed by direct complexometric titration?
- Sodium Chloride
 - Ammonium chloride
 - Magnesium sulphate
 - Aluminum hydroxide
- 15 When 100ml of 0.1 N HCl is titrated with 0.1N NaOH using phenolphthalein solution as an indicator, at the end point solution will turn _____.
- Pink
 - Colorless
 - Yellow
 - Orange
- 16 Complexing agent that will form complex more strongly with the metal than the titrant under the condition of titration is known as _____.
- Auxiliary chelating agent
 - Demasking agent
 - Complexing agent
 - Masking agent
- 17 Chelating agents which form water soluble complexes are called as _____.
- Precipitating agents
 - Sequestering agents
 - Chelating agents
 - Complexing agents
- 18 _____ is used as an indicator in cerimetry.
- Crystal violet
 - Ferroin
 - Methyl violet
 - Starch
- 19 One of the following is an aprotic solvent used in non-aqueous titration.
- Sulphuric acid
 - Ethanoic acid
 - Carbon tetrachloride
 - Ammonia
- 20 The following substances are primary standard EXCEPT _____.
- Potassium hydrogen phthalate
 - Arsenic trioxide
 - Sodium hydroxide
 - Anhydrous sodium carbonate

Q. II Answer any two questions. (Any 2) **20**

- 1 Explain neutralization curve for strong acid and strong base. Write a brief note on types of non-aqueous solvents. **10**
- 2 Explain the following terms: **10**
(i) Titration (ii) Visual end point (iii) Theoretical end point (iv) Parts per million (v) Mole fraction
- 3 What is redox titration? Explain Iodimetry and Iodometry in detail. **10**

Q. III Answer any seven questions (Any Seven) **35**

- 1 How will you determine halogen by Mohr's method? Give its limitations. **5**
- 2 Write the principle used behind complexometric titration? Define Ligands and classify it with examples. **5**
- 3 Define precipitation titration. Explain the Fajan's method used for detection of end point in precipitation titration. **5**
- 4 Enlist different types of EDTA titration and explain any two of them using suitable examples. **5**
- 5 Give advantages, disadvantages, and applications of conductometry. **5**
- 6 Write a principle, construction, working and limitations of Glass Electrode. **5**
- 7 Explain the construction and working of rotating platinum electrode with a neat labelled diagram. **5**
- 8 Define error. Classify the error and give the methods for error minimization. **5**
- 9 A titration is carried out for 40.00 ml of 0.1M HCl (strong acid) with 0.1M of NaOH (strong base) calculate the pH values at the start of titration and after addition of 10.00 ml, 40.00 ml and 45.00 ml of titrant. **5**