

(3 Hours)

(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 Instrument error can be corrected by _____.
 - a. Cleaning of instrument and apparatus
 - b. Changing instrument and apparatus
 - c. Calibration of the instrument and apparatus
 - d. Running a blank determination
- 2 Repeatable results of analytical experiment indicates _____ of analytical method
 - a. Accuracy
 - b. Precision
 - c. Error
 - d. Reliability
- 3 What is a measure of precision of analytical measurements?
 - a. Standard deviation
 - b. Absolute error
 - c. Mean absolute error
 - d. Mean
- 4 The strength of 1 M iodine solution is equal to _____ solution
 - a. $\frac{1}{2}$ N
 - b. 1N
 - c. 2N
 - d. 1/10 N
- 5 Ephedrine hydrochloride is assayed by
 - a. Non-aqueous acid-base titrations
 - b. Complexometric titration
 - c. Precipitation titration
 - d. Aqueous acid base titrations
- 6 Determination of concentration of analyte by polarography is based on _____.
 - a. Ilkovic equation
 - b. Nernst equation
 - c. Ohm's law
 - d. Faraday's Law
- 7 The curve obtained by plotting pH as ordinate against volume of titrant as abscissa is known as
 - a. Neutralisation curve
 - b. Precipitation curve
 - c. Standard curve
 - d. Calibration curve
- 8 _____ is used as indicator in cerimetry
 - a. Starch
 - b. Ceric ammonium sulphate
 - c. Ferroun
 - d. Methyl violet

- 9 The concentration 10 microgram of solute per cm^3 is ____.
- 1 ppm
 - 10 ppb
 - 10 ppm
 - 10 %w/v
- 10 _____ indicator is used for strong acid strong base titrations
- Crystal violet
 - Methyl yellow
 - Methyl orange
 - Xylenol orange
- 11 The titration carried out between the KCl and AgNO_3 is termed as ____.
- Precipitation titration
 - Redox titration
 - Complexometric titration
 - Non aqueous titration
- 12 _____ is an example of sequestering agent
- Dimethyl glyoxime
 - Potassium chromate
 - Salicyaldoxime
 - EDTA
- 13 _____ is indicator electrode
- SHE
 - Silver chloride electrode
 - Glass electrode
 - Calomel electrode
- 14 The indicator used in complexometric titration are termed as
- pM indicator
 - pH indicator
 - external indicator
 - adsorption indicator
- 15 Benzene is _____ solvent
- aprotic solvent
 - protogenic
 - photophilic
 - neutral
- 16 Identify the correct combination of titrant and indicator:
- disodium edetate and mordant balck II
 - perchloric acid and phenolphthalein
 - sodium methoxide and starch
 - sodium thiosulphate and phenol red
- 17 Solubility of inorganic precipitate is reduced by
- addition of acid
 - addition of organic solvent
 - increase in temperature
 - addition of precipitating agent
- 18 Starch solution is used as an indicator in ____.
- Permanganometry
 - Cerrimetry
 - Iodine titration
 - Dichromometry

- 19** Acidimetry is
- Titration of base (analyte) with acid (titrant)
 - Titration of acid (analyte) with base (titrant)
 - Determination of purity of acid substance
 - Blank determination of acidic solvent with base
- 20** Primary standards are
- Solutions of known concentration of analyte
 - Substances of highest purity
 - Substances of less purity than secondary standards
 - Substances of same standards as that of secondary standard

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

20

- Explain neutralisation curves. Write a detailed note on theories of acid base indicators. **10**
- Explain the concept of accuracy and precision of analytical method **10**
 - Give two examples of each of the following
 - Reagent error
 - Primary standard
 - Personal error
- Give an overview on following redox titrations with its principle and applications **10**
 - Cerrimetry
 - Iodimetry
 - Iodometry

Q. III Answer any seven questions (Any Seven)

35

- Explain the principle and reaction involved in Mohr's method **5**
- Give principle and reaction involved in assay of calcium gluconate injection **5**
- Explain unit operations in gravimetric analysis **5**
- Give principle reaction involved in determination of diazotization titration with suitable example **5**
- Explain theory and principle of Conductometry. Give any two applications of conductometry **5**
- What is indicator electrode? Give construction and working of glass electrode **5**
- Write in detail about DME with respect to construction, working advantages and disadvantages **5**
- Replicate water samples are analysed for water hardness with following results 102.2, 102.8, 103.1 and 102.3 ppm CaCO_3 calculate Mean, Median and standard Deviation. **5**
- When 50 ml of 0.1 M HCl is titrated with 0.1M NaOH, calculate the pH values at the start of the titration and after addition of 10,50,60 ml of titrant. **5**