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 the concentration of solution containing 2g of NaOH in 200 ml of solution?
   a. 0.10 M
   b. 0.25 M
   c. 0.50 M
   d. 1.00 M

2 Precision of an analytical method is measured in terms of _____.
   a. Standard deviation
   b. Mean
   c. Median
   d. Absolute error

3 In a limit test for impurities in a pharmaceutical substance, limit concentration for each impurity indicates _____.
   a. Therapeutic value of impurity
   b. Molecular weight of impurity
   c. Acceptable value of impurity
   d. Chemical formula of impurity

4 _____ is an example of indicator used in bromatometry
   a. Mordant black
   b. Starch
   c. Phenolphthalein
   d. Potassium thiocyanate

5 The pH at the equivalence point of a titration of weak base with strong acid is usually _____.
   a. 5.5
   b. 7.0
   c. 8.5
   d. 11.5

6 Which of the following is a specific conductivity reagent?
   a. Potassium chloride
   b. Sodium chloride
   c. Magnesium chloride
   d. Hydrogen chloride

7 Traces of water from perchloric acid and acetic acid are removed by addition of _____.

a. Acetone
b. Acetonitrile
c. Acetic anhydride
d. Acetanilide

8 Cerric ammonium sulphate acts as _____ in acidic medium.

a. Strong oxidizing agent
b. Strong reducing agent
c. Complexometric agent
d. Precipitating agent

9 The following substances are primary standard EXCEPT _____.

a. Arsenic trioxide
b. Anhydrous sodium carbonate
c. Sodium hydroxide
d. Potassium hydrogen pthalate

10 According to Ostwald theory of indicators, phenolphthalein in acidic medium is _____ and appears _____.

a. Ionized, pink
b. Unionized, pink
c. Ionized, colorless
d. Unionized, colorless

11 Sodium chloride I.P. is assayed by _____ method

a. Mohr's method
b. Volhard's method
c. Modified Volhard's method
d. Fajan's method

12 Complexing agent that will form complex more strongly with the metal than the titrant under the condition of titration is known as ____.

a. Precipitating agent
b. Masking agent
c. Demasking agent
d. Redox agent

13 Quantitative analysis of polarograph is based on _____.

a. Half wave potential
b. Migration current
c. Limiting current
d. Electrode potential

14 How many lone pair of electrons are there in EDTA?
   a. Two
   b. Four
   c. Six
   d. Eight

15 Protogenic solvents are _____ in nature
   a. Acidic
   b. Basic
   c. Neutral
   d. Amphoteric

16 During gravimetric analysis, when two or more ions are precipitated simultaneously in the sample solution, the condition is referred to as _____.
   a. Ostwalds's ripening
   b. Post precipitation
   c. Co-precipitation
   d. Digestion

17 Compounds that can be assayed by diazotization titrations include _____.
   a. Metals
   b. Amines
   c. Acids
   d. Alkali

18 Indirect titration of iodine is also referred as _____.
   a. Iodimetry
   b. Iodometry
   c. Cerrimetry
   d. Dichrometry

19 The curve obtained by plotting pH as ordinate against volume of titrant as abscissa is known as _____.
   a. Calibration Curve
   b. Polarograph
   c. Neutralization curve
   d. Standard Curve

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

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

1 Define Acidimetry. Explain the resonance theory of indicators with suitable example. Write a brief note on solvents used in non-aqueous titrations. **10**

2 Explain the following terms: (i) Primary Standard (ii) Normality (iii) Precision (iv) Pharmacopoeia (v) Significant figures. **10**

3 Enlist types of redox titrations. Explain the principle and reaction involved in Cerrimetry and potassium iodate titrations. **10**

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

1 Explain the determination of halogens by Mohr's method. **5**

2 Define Chelating agents. Discuss the principle involved in the assay of Calcium gluconate. **5**

3 What is Gravimetric analysis? Explain masking and demasking agents used in complexometric titrations. **5**

4 Write a note on factors affecting precipitations titrations? State the indicator and applications of diazotization titration. **5**

5 Enlist the types of conductometric titration and explain the principle of conductometry. State any two applications. **5**

6 What are potentiometric titrations and their applications? Explain the construction and working of standard Calomel electrode. **5**

7 Explain the terms half wave potential, diffusion current, limiting current with the help of Polarographic C-V curve. Give the applications of polarography. **5**

8 Enlist the different techniques of analysis. Classify errors with suitable example. **5**

9 What volume of 0.1M HCl solution would be required to neutralize 50 ml of 0.1M NaOH? Calculate pH at the start of titration and after adding 10 ml, 25 ml, and 60 ml of titrant. **5**