



Library  
Pharmaceutical Technology  
Brainware University  
Barasat, Kolkata-700125

## BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – B.Pharm-2019/B.Pharm-2020/B.Pharm-2022/B.Pharm-2023/B.Pharm-2024

Course Name – Pharmaceutical Analysis I

Course Code - BP102T

( Semester I )

Full Marks : 75

Time : 3:0 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

### Group-A

(Multiple Choice Type Question)

1 x 20=20

1. Choose the correct alternative from the following :

- (i) Identify the correct option from the following- potentiometry is an example of \_\_\_\_\_ kind of analytical method.
  - a) Electroanalytical method
  - b) Analytical separation method
  - c) Analytical spectroscopic method
  - d) Volumetric method
- (ii) Which of the following is a hyphenated technique of analysis?
  - a) Gas chromatography-Mass spectroscopy
  - b) Thermal-gravimetry
  - c) Gas chromatography-Mass spectroscopy & Thermal-gravimetry
  - d) None of these
- (iii) Identify the correct option from the following, molarity is expressed as \_\_\_\_\_.
  - a) Number of moles of solute in 1kg of solvent.
  - b) Number of moles of solute in 1000 ml of solution.
  - c) Number of equivalent weights of solute in 1000 ml solution
  - d) None of the these.
- (iv) Identify the correct option from the following- molarity of a solution containing 80g of NaOH in 1000 ml solution is \_\_\_\_\_.
  - a) 2 M
  - b) 1 M
  - c) 0.5 M
  - d) 0.3 M
- (v) Select the correct option- a measure of concordance of a series of measurements of the same quality is \_\_\_\_\_.
  - a) Absolute error
  - b) Accuracy
  - c) Precision
  - d) Variance
- (vi) Select the correct option, Gutzeit apparatus is used in the limit test of \_\_\_\_\_.
  - a) Lead
  - b) Sulphate
  - c) Iron
  - d) Arsenic
- (vii) Select the correct option, the colour of ferrous thioglycolate complex is \_\_\_\_\_.

- a) Reddish violet                      b) Bluish green  
c) Yellow                                  d) Violet
- (viii) Select the correct option, Which of the following is an example of electroanalytical method?
- a) Potentiometry                      b) Polarography  
c) Conductometry                      d) All of these
- (ix) Select the correct option, Accuracy is expressed as a \_\_\_\_\_
- a) measure of how closely a measured quantity agrees with the true value                      b) measure of how closely a measured quantity agrees with the nominal value  
c) measure of how closely a measured quantity disagrees with the nominal value                      d) None of these
- (x) Select the right one, what is the molarity of a solution containing 98 g of H<sub>2</sub>SO<sub>4</sub> in 1000 ml solution?
- a) 2 M                                      b) 0.3 M  
c) 1 M                                      d) 0.5 M
- (xi) Select the correct one, dithizone is used in the limit test of \_\_\_\_\_.
- a) Lead                                      b) Arsenic  
c) Sulphate                                      d) Iron
- (xii) Select the correct one, The titrant used in Permanganometry is
- a) KMnO<sub>4</sub>                                      b) KBr  
c) I<sub>2</sub>    d) K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>
- (xiii) Choose the correct one, the molarity of a solution containing 98 g of H<sub>2</sub>SO<sub>4</sub> in 1000 ml solution is \_\_\_\_\_ M.
- a) 2    b) 0.3  
c) 1    d) 0.5
- (xiv) Choose the correct one, the equivalent weight of perchloric acid is \_\_\_\_\_.
- a) 100.5                                      b) 75.5  
c) 45.5                                      d) 63.5
- (xv) Select the compound which is not estimated by Complex metric titration.
- a) Magnesium trisilicate                      b) Ferrous ammonium citrate  
c) Calcium lactate                      d) Progesterone
- (xvi) Select the correct one. Which electrochemical method is used to measure electromotive force?
- a) Amperometry                      b) Conductometry  
c) Polarography                      d) Potentiometry
- (xvii) Choose the correct option, which electrochemical technique is used for the determination of the electroactive species concentration in a solution?
- a) Coulometry                      b) Conductometry  
c) Voltammetry                      d) Potentiometry
- (xviii) Choose the correct option, what is faraday constant (F) commonly used for in electrochemical calculations?
- a) To convert moles of substance to coulombs.                      b) To determine the pH of a solution.  
c) To measure electrode potential.                      d) To calculate the molar mass of a substance.
- (xix) Choose the correct option, Which of the following is the equivalence point in a titration of a strong acid and a weak base?
- a) The point at which the pH of the solution is 7                      b) The point at which the pH of the solution is equal to the pK<sub>a</sub> of the weak base  
c) The point at which the volume of titrant added is equal to the volume of analyte solution                      d) All of these
- (xx) choose the correct option, Which of the following is a buffer solution?

- a) A solution that contains a weak acid and its conjugate base      b) A solution that contains a weak base and its conjugate acid  
c) A solution that contains a strong acid and its conjugate base      d) A solution that contains a strong base and its conjugate acid

### Group-B

(Short Answer Type Questions)

5 x 7=35

2. Describe in details about the assay of copper sulphate according to iodometry. (5)  
3. Discuss in brief about construction and reference of metal indicator electrode. (5)  
4. Explain the neutralization curve of strong acid vs. strong base. (5)  
5. Describe about the different sources of impurities in Pharmaceutical substances. (5)  
6. Describe "Mohr's method" with schemactic representation and working reactions. (5)  
  
7. Write the between Mohr's method and Volhard's method. (5)

OR

Write the difference between iodometry and iodimetry. (5)

8. Write the construction and working of rotating platinum electrode (5)

OR

Write the methods to determine end point of potentiometric titration (5)

### Group-C

(Long Answer Type Questions)

10 x 2=20

9. Illustrate the "Ilkovic Equation" in a brief manner along with derivation of the terms "Residual current", "Migration current" and "Diffusion current". (10)  
  
10. Summarize the process conductometric titration, and explain its applications (10)  
  
OR  
Summarize the working of Standard hydrogen, silver chloride electrode and calomel electrode. (10)

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