

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)

CLASS: B.PHARM.  
BRANCH: PHARMACY

SEMESTER: I  
SESSION: MO/2022

SUBJECT: BP102T PHARMACEUTICAL ANALYSIS

TIME: 3.00 Hours

FULL MARK: 75

INSTRUCTIONS:

1. The missing data, if any, may be assumed suitably.
  2. Before attempting the question paper, be sure that you have got the correct question paper.
  3. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
  4. This question paper consists of (03) three parts. Read the part wise instructions before attempting the questions.
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PART-I

Objective types questions (Instruction: Answer all questions)

(10 x 2 = 20 Marks)

1. Volumetric methods are used for
  - a. Quantitative & Semiquantitative analysis
  - b. Qualitative & Semiquantitative analysis
  - c. Semiquantitative & Semiquantitative analysis
  - d. Semiquantitative & Quantitative analysis
2. The volume of titrant which reacts with the analyte is known as
  - a. Titrant V
  - b. Titre
  - c. Aliquot
  - d. Burette reading V
3. Which of the following is used as an indicator in the titration of iodine with hypo?
  - a. Methyl Red
  - b. Methyl Orange
  - c. Starch
  - d. Pot. Ferricyanide
4. What will be the pH at the equivalence point in the titration of a weak acid and a strong base?
  - a. 0
  - b. 7
  - c. <7
  - d. >7
5. How many mmols of NaOH will be used in the titration with 33ml of 3M HCl to form NaCl and water?
  - a. 100 mmole
  - b. 10 mmole
  - c. 3 mmole
  - d. 33 mmole
6. The amount of NaOH used in the titration of 100 ml 0.1 N HCl is
  - a. 4.0 g
  - b. 40.0 g
  - c. 0.4 g
  - d. 2.0 g
7. Redox reaction is also known as an oxidation-reduction reaction which involves
  - a. transfer of protons between two species.
  - b. transfer of neutrons between two species.
  - c. transfer of electrons & protons both between two species
  - d. transfer of electrons between two species.
8. Titration of Acetic acid with Ammonium hydroxide is an example of
  - a. Weak acid Vs Weak base
  - b. Weak acid Vs Strong base
  - c. Strong acid Vs Strong base
  - d. Strong acid Vs Strong base

9. The diffusion current in the polarography depends on all of the following, Except:
- Capillary diameter
  - Temperature & Pressure
  - Life time of mercury drop
  - Charge of the electrolyte
10. The unit of conductance cannot be expressed in
- mho
  - (ohm)<sup>-1</sup>
  - ohm/m
  - Siemen

### PART-II

#### Short Answers

(Instruction: Answer seven out of nine questions)

(7 x 5 = 35 Marks)

- Q 1. Define accuracy, precision and error in Pharmaceutical Analysis with examples.  
 Q 2. What is Standard solution? Describe the differentiate types of standard solution with examples.  
 Q 3. Differentiate between Mohr's and Volhard's Method of Precipitation titrations with examples.  
 Q 4. Enumerate the different Nonaqueous solvents and their properties with examples.  
 Q 5. Match the following titrations with the indicators used in them

#### Column 1

NaOH vs CH<sub>3</sub>COOH

KMnO<sub>4</sub> vs H<sub>2</sub>C<sub>2</sub>O<sub>4</sub>

I<sub>2</sub> vs Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>

K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> vs FeSO<sub>4</sub>

#### Column 2

K<sub>3</sub> [Fe(CN)<sub>6</sub>] as an external indicator

Starch

KMnO<sub>4</sub>

Phenolphthalein

- Q 6. What are Complexometric titrations? Discuss a few complexometric indicators with their structures  
 Q 7. What is Potentiometric titration? Name and discuss the use of salt bridge in potentiometric titrations.  
 Q 8. Describe the construction of a Polarogram and discuss the Ilkovic equation with its importance.  
 Q 9. What's the principle of Gravimetric Analysis? How do you estimate Barium sulphate gravimetrically?

### PART-III?

#### Long Answers

(Instruction: Answer two out of three questions)

(2 x 10 = 20 marks)

- Q 1. Describe Acidimetry & Alkalimetry citing examples of compounds present in Indian Pharmacopoeia.  
 Q 2. Draw a neat sketch of Glass Electrodes and discuss its operation and applications.  
 Q 3. Highlight the importance of Conductometric titrations with at least two important examples.

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