

SVKM'S NMIMS

Shobhaben Pratapbhai Patel / School of Pharmacy & Technology Management

Programme: B. Pharm / B. Pharm + MBA

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Marks: 75

Subject: Pharmaceutical Analysis - Theory

Time: 10.00 am to 1.00 pm

Duration: 3 hrs.

Date: 13 December 2019

No. of Pages : 4

FINAL EXAMINATION

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

- 1) All questions are compulsory.
- 2) Attempt any two from question no. two and seven from question no.3.
- 3) In all three questions to be attempted.
- 4) Answer to each new question to be started on a fresh page.
- 5) Figures in brackets on the right hand side indicate full marks.
- 6) Assume suitable data if necessary. Illustrate your answers with balanced chemical reactions where ever necessary.

Q.1 Multiple Choice questions (attempt all) 20x1 = 20M

- 1.1 ----- is example of instrumental method of analysis.
a) Spectrophotometry b) Titrimetry c) Gravimetry d) Complexometry
- 1.2 How many grams of H₂SO₄ present in 500ml of 1N solution of H₂SO₄?
a) 98 b) 49 c) 24.5 d) 36.5
- 1.3 What will be the molarity of 4% W/V solution of NaOH?
a) 1.0 M b) 0.5M c) 4.0M d) 0.1M
- 1.4 For the standardization of perchloric acid solution, ----- used as primary standard.
a) phthalic acid b) potassium hydrogen phthalate c) sodium benzoate
d) acetic anhydride
- 1.5 -----reflects how reproducible measurements are.
a) Precision b) Accuracy c) Error d) Standard deviation
- 1.6 How many significant figures present in 0.07001?
a) 4 b) 5 c) 6 d) 2
- 1.7 ----- is not pH indicator.
a) Starch solution b) Bromothymol blue
c) Phenolphthalein d) Methyl orange
- 1.8 Aqueous ammonia is -----.
a) strong base b) diacidic base c) weak base d) ployprotic acid

- 1.9 pH of the titration solution at equivalence point in strong acid weak base titration will be -----.
- a) pH = 7 b) pH > 7 c) pH < 7 d) pH = 0
- 1.10 In non-aqueous alkalimetry titration, which of the following titrant is used?
- a) Pyridine b) Absolute alcohol
c) Glacial acetic acid d) Sodium methoxide
- 1.11 ----- is example of adsorption indicator suitable for the titration of chloride and bromide.
- a) Crystal violet b) Phenosafranine c) Picric acid d) Starch mucilage
- 1.12 Ligand having more than one electron pair donating group are called -----
- a) Chelating agent b) oxidizing agent c) reducing agent d) surfactants.
- 1.13 ----- solution is used as titrant in diazotization titration.
- a) Na_2NO_2 b) NaNO_2 c) AgNO_2 d) HNO_3
- 1.14 A process of conversion of a precipitate in to colloidal form is known as -----
- a) peptization b) flocculation c) salting out effect d) common ion effect
- 1.15 In Dichrometry -----
- a) Potassium dichromate is used as oxidizing agent
b) Potassium Chromate is used as Oxidizing agent
c) Trichromic acid is used as reducing agent
d) All of the above
- 1.16 Ferroin chemically known as ----
- a) 1,10-phenanthroline Iron(II) sulphate complex
b) 9,10-phenanthroline Iron(III) sulphide complex
c) 1,2-phenanthroline Iron(III) sulphate complex
d) 1,10-phenanthroline Mn(II) sulphate complex
- 1.17 Complete the following reaction:
- $2\text{S}_2\text{O}_3^{2-} \rightarrow \text{oxidation} \rightarrow$
- a) $\text{S}_4\text{O}_6^{2-} + e$ b) $\text{S}_4\text{O}_6^{2-} + 4e$ c) $\text{S}_4\text{O}_6^{2-}$ d) $\text{S}_4\text{O}_6^{2-} + 2e$
- 1.18 In ideal gravimetric analysis ----- is required.
- a) Colloidal particles with small particle size
b) Gelatinous precipitate with large particle size
c) Amorphous precipitate small particle size
d) Crystalline precipitate with large particles

1.19 Chemical formula of calomel is -----
a) CaCl_2 b) HgCl_2 c) Hg_2Cl_2 d) KCl

1.20 In polarography the instrument used is -----
a) Polarogram b) Potentiometer c) Voltmeter d) Polarograph

Q.2 Attempt any two 2x10 = 20M

2.1 Give the principal and procedure involved in the assay of NaCl IP. Explain different ways by which AgCl and NH_4SCN solution interaction can be prevented in argentometry. Describe the adsorption indicator method used for the standardization of AgNO_3 solution, using NaCl as primary standard along with the reason for reagents used in this analysis.

2.2 How will you classify solvents used in non-aqueous titrations? Give one example from each category. Give the principle and procedure for quantitative estimation of Ephedrine hydrochloride.

2.3 What do you mean by primary electrode? Give the construction and working of indicator electrode commonly used for determination of pH of the solution. Give its advantages and disadvantages. Enlist different methods for end point determination by potentiometric titrations.

Q.3 Attempt any seven from the following 7x5 = 35M

3.1 Give the theory and procedure for the standardization of approximately 0.1 N HCl solution. Calculate the factor for this titration. (Molecular weight of Na_2CO_3 is 105.99)

3.2 Enlist different ways by which the concentration of solutions can be expressed. Give the requirements for primary standard substances. Why NaOH is not primary standard substance?

3.3 Explain the resonance theory of indicator using Methyl orange or phenolphthalein as an example. Give the pH range of methyl orange and phenolphthalein indicator.

3.4 Why generally buffer solution is used in Complexometric titration? Give the principle and procedure for the assay of Magnesium sulphate.

3.5 Enlist different steps involved in gravimetric analysis by precipitation. Describe in short different filter papers & crucibles used for the filtration of precipitate in gravimetric analysis.

3.6 Give the principle and procedure involved in quantitative estimation of analyte

by potassium iodate titration.

- 3.7 Give the balanced chemical equations and procedure for estimation of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ by iodometry.
- 3.8 Draw labelled diagram of conductivity cell. Explain two applications of conductometry.
- 3.9 Define: Lewis Acid, Indicator, end point, equivalence point and neutralization point.