Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous)
Affiliated to Saurashtra University, Rajkot

SEMESTER END EXAMINATION NOVEMBER – 2016

B.Voc. Pharmaceutical Analysis and Quality Assurance

BVPAQA-103 – FUNDAMENTAL ANALYTICAL CHEMISTRY

Duration of Exam – 3 hrs   *Semester – I*   *Max. Marks – 70*

Que. 1 (A) Answer the following Questions   **[10]**

1. 1 Mole $NaHCO_3$ = _____ molecules of $NaHCO_3$

2. Gravimetric analysis is a _____ method. (Electroanalytical, Macro-quantitative, Micro-illusion)

3. Precipitation titrations are also known as _____ titrations.

4. Calculate the normality of 0.1M HCl solution.

5. Define sequestering agents.

6. Give examples of any one polar protic and one polar aprotic solvents.

7. Draw correct chemical structure of Phenolphthalein.

8. Calculate ppb concentration of 750 ml solution containing 0.5625 gm Calcium.

9. Calculate weight of 0.25 moles Na_2CO_3 sample.

10. Oxidation is ____ of electrons.

Que. 1 (B) Answer the following Questions   **[20]**

1. Define and classify Buffer Solution.

2. Enlist properties of precipitates for gravimetric analysis.

3. What are conjugated acid-base pair? Give any two examples.

4. Give the method to prepare 100 ml M/20 EDTA solution. (M.Wt. = 372.2 gm/mole)

5. Enlist types of solvents for non-aqueous titrations.

6. Calculate molecular weight & equivalent weight for following compounds: (i) NaCl, (ii) sodium hydroxide, (iii) Na_2CO_3 (iv) $NaHCO_3$

7. Explain the terms: (i) Accuracy (ii) Precision

8. Enlist 1 example of each of following: (i) strong acid (ii) strong base (iii) weak acid (iv) weak base

9. Give full name and chemical structure of EDTA.

10. Why neutral or slightly basic medium is used In Mohr's method of Argentometric Titration?

Que. 2 Answer the following Questions (Any Four) [20]

1. Discuss Starch indicators with its merits & demerits.

2. Describe the procedure to prepare following solutions:
   - (i)   50ml 1% solution of diphenylamine in conc. H_2SO_4
   - (ii) 2.5 liter 7% sugar solution

3. What is standardization? Explain standardization of 0.1M EDTA solution.

4. What is hydrolysis? Derive hydrolysis constant and degree of hydrolysis for salt of weak acid and strong base.

5. During a redox titration of FAS by $KMnO_4$, the observed burette are 24.8 ml, 25.2 ml, 25.2 ml, and 25.0 ml. Calculate mean, mean deviation, deviation for each observation, relative mean deviation and standard deviation for these readings.

6. Write a note on Mohr's Method of precipitation titration.

Que. 3 Answer the following Questions (Any Four) [20]

1. In an experiment was performed to determine the piperazine content of an impure commercial sample by following reaction.

   Piperazine   Acetic acid   Piperazine diacetate
   FM 86.136   FM 60.052   FM 206.240
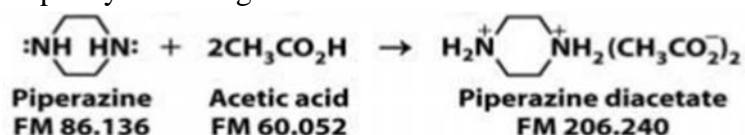
   Here 0.4225 gm sample was dissolved in 25 ml of acetone and 1.5 ml acetic acid was added. After 10 min. all the precipitates were filtered, washed with acetone and dried at 110 C. Weight of this dried precipitates was found to be 0.9295 gm. Find out the percentage of piperazine in given commercial sample.

2. Write a brief note on Iodometric and Iodimetric Titration.

3. Explain redox titration of $KMnO_4$ and Oxalic Acid.

4. Write a note on: EDTA in complexometric titrations.

5. Explain titrimetric assay determination of Adrenaline.

6. Derive the expression for hydrolysis constant (K_h) for the salt of weak acid and strong base in terms of K_a and K_w.

_____