[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 8340 **C** **Roll No.....**

Unique Paper Code : 217367

Name of the Paper : ACPT-303 : Analytical Chemistry – III

Name of the Course : B.Sc. (Prog.) App. Phy. Sc. – Analytical Chemistry

Semester : III

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions in all.
3. **All** questions carry equal marks.
4. Use of scientific calculator/log tables is permitted.

1. (a) How are the positive and negative errors occurring in coprecipitated impurities Represented in a gravimetric estimation ? Explain with example.

   (b) A 10 mL solution containing chloride (Cl^-) was treated with excess $AgNO_3$ to precipitate 0.436 g of AgCl (FM = 143.321). What was the molarity of chloride (Cl^-)in the unknown ? (5,10)

2. (a) How is the sampling of organic compounds present in a solid sample done ?

   (b) What are the conditions for mixed crystal formation ?

   (c) Derive the Henderson-Hasselbalch equation. (5,5,5)

3. (a) 50 mL of 0.1N HCl is titrated against 0.1N NaOH. Calculate the pH at the start of titration and after the addition of 10, 50, 60 mL of NaOH. Depict these changes by suitable titration curve.

P.T.O.

(b) Write a short note on Mohr's method for volumetric estimation of chloride ions. (8,7)

4. (a) Define Relative Centrifugal Field.

(b) Derive a correlation between sedimentation rate and particle size.

(c) What is Density gradient in the centrifugal technique ? Explain. (4,7,4)

5. (a) Define fly ash and how it is controlled.

(b) Propose a method to control

(i) CO emission

(ii) SO_2 emission (7,8)

6. (a) A compound weighing 5.714 mg produced 14.414 mg of CO_2 and 2.529 mg of H_2O upon combustion. Find the weight of C and H in the sample.

(b) Explain the difference between nucleation and particle growth. (8,7)