QUESTION BANK

PAPER IV (*ANALYTICAL* CHEMISTRY)

2022 - 2023

M.sc 1st semester

1. Explain with example :

(i) Personal error

(ii) Operational error

(iii) Methodic error.

2. Explain the role of precision in validation of analytical method. Distinguish between repeatability, robustness and reproducibility.

3. Define and explain 'significant figures' and give rules to determine the number of significant digits.

4. The results obtained for Sulphur content in a Kerosene sample are 0.112, 0.118, 0.115 and 0.119 %. If the actual Sulphur concentration was 0.123 %, determine if the result deviates significantly from the true value at 95 % confidence level. Given : t = 3.18 for v = 3.

5. Define 'ion exchange capacity'. To 5.0 g of Zeokarb – 225 resin in sodium form, 100 ml of 0.1N HCl solution was added to exhaust the resin completely. The eluate required 10.0 ml 0.15 N NaOH solution. Calculate ion exchange capacity of resin.

6. At 25º C, the solubility of methylamine in water is 9 times greater than in chloroform. Calculate percentage of methylamine extracted from one liter chloroform as :

(i) Four times with 200 ml water

(ii) Two times with 400 ml water.

7. Explain Ostwald theory of acid-base titration indicators. What is pH range of indicator?

8. Explain role of Nernst equation in :

(i) Determination of charge on ion

(ii) Solubility of sparingly soluble salt.

9. Define 'equivalent conductance' and give its units. What is the effect of addition of solvent on equivalent conductance.

10.Define 'indicator electrode'. Show that, antimony electrode can be used as indicator electrode for pH determination.