

- 1 (a) Define error. Explain the sources of error in pharmaceutical analysis. Write a note on the minimization of errors. (2+4+4) (4)
 (b) Define the terms:
 (i) Accuracy (B) Precision
OR
 (c) How burettes and pipettes are calibrated? (6)
 (d) Explain about significant figures and rules for computation. (8)
- 2 (a) State law of mass action and discuss its significance. (6)
 (b) Explain about neutralization curve for a titration between strong acid and strong base. Comment upon the indicators used in the above titration. (8)
OR
 (c) Write a note on solubility product and common ion effect. (8)
 (d) Define the terms pH, buffer, buffer action and buffer capacity. (6)
- 3 (a) Describe the principles of oxidation reduction titrations. Write the principle and procedure for assay of ascorbic acid. (4+6) (4)
 (b) Write a note on filtration media used in gravimetry. (4)
OR
 (c) How do you prepare and standardize 0.1M KMnO₄ solution? (5)
 (d) Discuss various steps involved in gravimetric analysis. (9)
- 4 (a) Write the principle and procedure involved in estimation of calcium gluconate by complexometry. (6)
 (b) Discuss about various methods for the determination of end point in precipitation titration. (8)
OR
 (c) Explain the principle involved in complexometric titration. Discuss about masking and demasking agents. (8)
 (d) Write the principle and applications of non-aqueous titration. (6)
- 5 (a) Define the terms empirical formula, molecular formula, molecular weight and equivalent weight. (8)
 (b) What is the empirical formula of a compound containing 56.4% oxygen and 43.6% phosphorus. (6)
OR
 (c) Write the mass balance equation for the following: (6)
 (A) $\text{Fe}^{3+} + \text{SCN}^- \rightleftharpoons \text{Fe}^{3+} [\text{Fe}(\text{SCN})_6]^{3-}$
 (B) $\text{Na}_2\text{CO}_3 + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O} + \text{CO}_2$
 (d) Calculate the normality of sulphuric acid when 50ml of sulphuric acid neutralizes with 200ml of decinormal sodium hydroxide. (3)
 (e) Write a note on mole concept and measuring of moles of elements and compounds. (5)
