

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name: Analytical Chemistry - I

Subject Code: 4SC03ANC1

Branch: B.Sc. (Chemistry, Physics)

Semester: 3

Date: 28/03/2018

Time: 02:30 To 05:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

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- Q-1** **Attempt the following questions:** **(14)**
- a) Define: Stationary phase. **(1)**
 - b) Define: Chromatogram. **(1)**
 - c) Define: Elution. **(1)**
 - d) Define: pH. **(1)**
 - e) Define: Singlet and Triplet states. **(1)**
 - f) Define: Fluorescence. **(1)**
 - g) pH scale is arranged between 0 to _____. **(1)**
 - h) Write the application of saturated calomel electrode. **(1)**
 - i) Write the principle of Fluorescence spectroscopy. **(2)**
 - j) What are different types of adsorbent? **(2)**
 - k) Write the advantages of Hydrogen Electrode. **(2)**

Attempt any four questions from Q-2 to Q-8

- Q-2** **Attempt all questions** **(14)**
- a) How will you determine vitamin B₁ and B₂ by fluorimetry? What are the limitations of fluorimetry? **(7)**
 - b) What is quenching? Discuss different types of quenching. **(4)**
 - c) Discuss types of Fluorescence. **(3)**
- Q-3** **Attempt all questions** **(14)**
- a) What is titration? Write a note on acid-base titration. **(7)**
 - b) Explain method of potentiometric redox titration $\text{FeSO}_4 \rightarrow \text{Ce}(\text{SO}_4)_2$. **(7)**
- Q-4** **Attempt all questions** **(14)**
- a) Write a note on **(7)**
 - (i) Descending paper chromatography and
 - (ii) Circular chromatography.
 - b) Discuss method of estimating dissociation constant of weak acid using pH metry? **(4)**



- c) Write a short note on calomel electrode. (3)
- Q-5** **Attempt all questions** (14)
- a) Explain factors affecting Fluorescence. (7)
- b) Explain the applications of fluorimetry. (7)
- Q-6** **Attempt all questions** (14)
- a) Write a note on method of preparation and development of TLC plates. (7)
- b) What are the advantages of TLC over other chromatographic techniques? (4)
- c) What is chromatography? Write the principle of partition and adsorption chromatography. (3)
- Q-7** **Attempt all questions** (14)
- a) Explain argentometric titration with suitable examples. (7)
- b) Discuss the principle and method of working of adsorption chromatography. (7)
- Q-8** **Attempt all questions** (14)
- a) Find out degree of dissociation and pH for a solution containing H^+ concentration of 0.2 M CH_3COOH , $K_a = 1.8 \times 10^{-5}$. (7)
- b) Discuss Jablonski diagram. (7)

