Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name: Analytical Chemistry-I

Subject Code: 4SC05CHC4 **Branch: B.sc (Chemistry)**

Semester: 5 **Date : 29/04/2016** **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.

Q-1 **Attempt the following questions:** **(14)**

a) Define: Absolute error (1)
b) Name the various types of conductometric titrations. (1)
c) Define: Solubility (1)
d) Define: Sparingly soluble salt (1)
e) State Lambert's law. (1)
f) Define: Molar absorptivity (1)
g) Define: Normality (1)
h) Define: Equivalent conductance (1)
i) What is indicator? (1)
j) Define: Kohlrausch law (1)
k) Give the merits of starch indicator. (1)
l) Calculate the molarity of 2 litre solution containing 100 gm NaOH. (1)
m) Name the various types of Argentometric titration. (1)
n) Define: Standard deviation (1)

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

Q-2 **Attempt all questions** **(14)**

A. Discuss determinate and indeterminate errors in detail. **(7)**

B. Given the following set of weights 29.8, 30.2, 28.6 and 29.7 mg. Calculate the average deviation and the standard deviation of the individual values and the average deviation and the standard deviation of the mean. **(7)**

Q-3 **Attempt all questions** **(14)**

A. If there is lack of absorbance by product and reagent, explain it with diagram. **(5)**
B. Give methods for the separation of NO^{2-}, NO^{3-}, Br^{-}. **(5)**
C. Mention the differences between thermal and photochemical reactions. **(4)**

(14)

Q-4 **Attempt all questions**

A. Discuss the nature of acid-base conductometric curve for the strong acid with weak base and weak acid with strong base. **(5)**

B. Give methods for the separation of PO_4^{3-}, AsO_4^{3-}, AsO_3^{3-} **(5)**

C. Give the applications of conductance measurements. **(4)**

Q-5 **Attempt all questions** **(14)**

A. Describe the method to determine the degree of hydrolysis and hydrolysis constant of salt by conductometry. **(5)**

B. Explain Mohr's method for the precipitation titration. **(5)**

C. Explain the effect of dilution on conductance. **(4)**

Q-6 **Attempt all questions** **(14)**

A. Discuss various types of Redox indicators. **(5)**

B. Explain Iodometric estimations. **(5)**

C. Give the characteristics of the substances used as primary standard. **(4)**

Q-7 **Attempt all questions** **(14)**

A. Explain polyprotic acid against strong base titration with diagram. **(5)**

B. Each of the following sets of data has what appears to be an outlaying results. Apply the cutest (90% confidence) to determine whether this value should be retained or rejected. (Q_{tab} for A & C = 0.76, Q_{tab} for B = 0.94) **(5)**

A	B	C
14.64	9.22	9.22
14.46	9.03	9.06
14.41	9.20	9.20
14.44	-	9.24

C. For 8% 500 ml aqueous solution of ether how much ml of ether is needed to be solubilized in H_2O. **(4)**

Q-8 **Attempt all questions** **(14)**

A. Discuss the shape of the precipitation titration curve of $BaCl_2$ by Na_2SO_4. **(5)**

B. Explain Volhard method for the precipitation titration. **(5)**

C. Discuss the speciality of conductometric titrations. **(4)**