

# C. U. SHAH UNIVERSITY

## Summer Examination-2019

**Subject Name: Analytical Chemistry-II****Subject Code: 4SC05ACH1****Branch: B.Sc. (Chemistry)****Semester: 5****Date: 22/03/2019****Time: 10:30 To 01:30****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.

<b>Q-1</b>	<b>Attempt the following questions</b>	<b>(14)</b>
a)	What is called precipitation titration?	01
b)	Give the wavelength range of colorimetry.	01
c)	What do you mean by titration?	01
d)	Define equivalent conductance	01
e)	What is called indicator?	01
f)	Define standard deviation	01
g)	Find the molarity and normality of 200mL solution containing 10gm of $K_2Cr_2O_7$ .	01
h)	Define the term error	01
i)	What is Coefficient of variance (C.V.)? Give equation for finding C.V.	01
j)	What do you mean by specific conductance?	01
k)	Define argentometric titration	01
l)	How many significant figures are there in 0.0233, 200.00 and 20.02?	01
m)	Find the mean and median for the given set of data: 23.4, 23.5, 23.3, 23.2 and 23.8.	01
n)	Define the term end point in titration	01

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

<b>Q-2</b>	<b>Attempt all questions</b>	<b>(14)</b>
a)	Explain the types of errors in detail.	<b>07</b>
b)	Derive the Lambert-Beer's Law and give its applications.	<b>07</b>
<b>Q-3</b>	<b>Attempt all questions</b>	<b>(14)</b>
a)	Write note on Ostwald's theory regarding acid-base indicators.	<b>07</b>
b)	Define primary standard with example and give the characteristics of primary standard.	<b>07</b>
<b>Q-4</b>	<b>Attempt all questions</b>	<b>(14)</b>
a)	The data obtained by analyzing compound X as 48.32 %, 48.36 %, 48.23%, 48.11%	<b>05</b>



and 48.38%. Calculate the median value, mean value, standard deviation coefficient of variance.

- b) Discuss the methods for the separation of  $\text{NO}_2^-$ ,  $\text{NO}_3^-$  and  $\text{Br}^-$ . **05**  
c) Discuss the iodometry and iodimetry titration. **04**

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

- a) Explain the Mohr's method for argentometric titration. **07**  
b) Discuss the various types of acid-base titrations with curve. **07**

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

- a) Explain the Volhard method for precipitation titration. **07**  
b) Explain the precipitation titration of  $\text{AgNO}_3$  vs.  $\text{NaCl}$  and  $\text{Ba}(\text{OH})_2$  vs.  $\text{MgSO}_4$  by conductometrically. **07**

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

- a) Write a note on degree of hydrolysis ( $h$ ) and hydrolysis constant ( $K_h$ ). **07**  
b) What do you mean by cell constant? Derive the equation and give importance of cell constant. **07**

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

- a) Explain the separation of  $\text{PO}_4^{-3}$ ,  $\text{AsO}_3^{-3}$ ,  $\text{AsO}_4^{-3}$  ions. **05**  
b) Discuss the methods for minimization of errors. **05**  
c) Calculate mean value from the results obtained in volumetric analysis are 11.12 mL, 10.90 mL and 11.02 mL. Among these results 11.40mL is out of range, whether this result is to be rejected? For fourth observation Q table value given is 0.74. **04**

