Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name: Analytical Chemistry-II
Subject Code: 5SC02ACH1 **Branch: M.Sc. (Chemistry)**
Semester: 2 **Date: 25/04/2019** **Time: 02:30 To 05:30** **Marks: 70**

Instructions:

(1) Use of Programmable calculator and 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.

SECTION – I

Q-1		**Attempt the Following questions**	**(07)**
	a	How many significant figures are there in 0.0233, 200.00 and 20.02?	**1**
	b	Find the mean and median for the given set of data: 23.4, 23.5, 23.3, 23.2 and 23.8.	**1**
	c	What is coefficient of variance (C.V.)? Give its equation.	**1**
	d	What do you mean by standard deviation?	**1**
	e	What is called quantitative analysis?	**1**
	f	Define the term accuracy	**1**
	g	What do you mean by validation of analytical method?	**1**
Q-2		Attempt all questions	**(14)**
	a	Write the differences between quality control and quality assurance.	**07**
	b	Discuss the control chart in detail used in analytical chemistry.	**07**

OR

Q-2		Attempt all questions	**(14)**
	a	Discuss the validation of analytical methods.	**07**
	b	Write a note on data processing.	**07**
Q-3		Attempt all questions	**(14)**
	a	Write a note on types of errors.	**05**
	b	You are developing a new colorimetric procedure for determining of glucose content and you have chosen Folin-Wu procedure with are going to compare your results.From the following two sets of replicates analyses on the same sample, determine whether the variance of your method differs significantly (Test of significance) from that of the standard method.	**05**

Sr. No.	Your method (mg/dL)	Folin-Wu method (mg/dL)
1	127	130
2	125	128
3	123	131
4	130	129
5	131	127
6	126	125
7	129	
Mean	$\overline{x1} = 127$	$\overline{x2} = 128$

c The following set of chloride analyses on separate aliquots of pooled serum were reported 103, 106, 107 and 114 meq/L. One value appears suspect. Determine if it can be ascribed to accidental error at the 95% confidence level. **04**

OR

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

a Explain confidence limit. **05**

b Discuss the principles of GLP. **05**

c A soda sample is analyzed in the analytical chemistry laboratory by titration with standard hydrochloric acid. The analysis is performed in triplicate with the following results: 93.50, 93.58 and 93.43 % Na_2CO_3. Within what range are you 95% confident that the true value lies? (at 95% confidence level the tabulated value of t = 1.96). **04**

SECTION – II

Q-4 Attempt the Following questions **(07)**

a How much amount of $K_2Cr_2O_7$ require to prepare 0.5 N, 500mL solution? **01**

b Define sampling **01**

c What is called molality? Give equation for finding the molality. **01**

d What do you mean by chromophore? **01**

e Give the wavelength of UV-Visible spectroscopy. **01**

f What is called calibration? **01**

g Define and write equation for normality. **01**

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

a Discuss the instrumentation of UV-Visible spectroscopy. **07**

b Write a note on general steps for chemical analysis. **07**

OR

Q-5		Attempt all questions	**(14)**
	a	Write a note on various transitions in UV-Visible spectroscopy.	**07**
	b	Explain the calibration of burette and flask.	**07**

Q-6		Attempt all questions	**(14)**
	a	Discuss the least square regression method.	**05**
	b	Write a note on standard addition method.	**05**
	c	Write a note on effect of conjugation in UV-Visible spectroscopy.	**04**

Q-6		Attempt all questions	**(14)**
	a	Draw instrumental diagram of UV-Visible spectrophotometer and label each component.	**05**
	b	Discuss the internal standard method.	**05**
	c	Explain the various shifts in UV-Visible spectroscopy.	**04**