a. Adsorption b. sublimation c. partition.

Q1. B. State true or false (any three) (03)

i. Fractional Distillation is a chemical method
ii. Mean is average of all the values.
iii. Quinhydrone is used in Potentiometric titrations
iv. pH meter cannot be used for water analysis
v. A test rejected by 2.5d rule can be retained by 4.0 d rule
vi. Precipitation is a physical method of separation

Q1. C. Match the columns (any five) (05)

Column A	Column B
i. Saturated KCl	a. Chromatography
ii. Separation technique	b. Melting point
iii. Saturated calomel electrode	c. Salt bridge
iv. Glass electrode	d. Reference electrode
v. Fractional Distillation	e. Conductivity cell
vi. 2.5 d rule	f. Combination of result
	g. Rejection of result
	h. pH

Q.2. Attempt the following (any four) (20)

A. List the applications of TLC
B. Explain the ascending technique used in paper chromatography
C. Explain the two-dimensional technique used in paper chromatography
D. Write a note on applications of HPLC.
E. 500 cm^3 of water contains 100mg of an acid. It is shaken with 50 cm^3 of organic solvent. 20 mg of acid is unextracted. Calculate the distribution ratio of acid between water and organic solvent.
F. State the principle of solvent extraction. What are its advantages?

Q.3. Attempt the following (any four) (20)

A. Describe the experimental procedure for carrying out potentiometric titration.
B. List the advantages and limitations of conductometric titrations.
C. Discuss the conductometric titration curve of strong acid vs strong base.
D. What are the applications of pH metry in biological and environmental analysis?
E. Explain the basic principle of potentiometric titration.
F. What is glass electrode? Draw a neat labeled diagram of glass electrode. List its merits.

VCD
MARKS:100

CHEMISTRY P-III S.Y.B.Sc SEM-IV ATKT Oct 2019

TIME : 3 Hrs

NOTE: i) All the questions are compulsory.
ii) Figures to right indicate full marks.
iii) Use of non –programmable calculator / log table is allowed.

Q1. A. Fill in the blanks with suitable option (any 12) (12)

i. Solids are separated by _____
a. Fractional distillation b. chromatography c. steam distillation

ii. Centrifugation is a _____ method of separation.
a. Chemical b. physical c. mechanical

iii. In TLC chromatography, mobile phase is _____
a. Solid b. liquid c. gas

iv. Solvent extraction is based on _____
a. Nernst distribution law b. Beer-Lamberts law c. Nernst equation

v. Electrophoresis is based on _____
a. Solubility b. ion exchange c. electric charge

vi. Saturated calomel electrode is used as a _____electrode.
a. reference b. ion selective c. indicator

vii. Separation factor in solvent extraction is the ratio of _____ of two solutes.
a. Solubility product b. ionic product c. distribution ratio.

viii. Membrane electrode is _____ electrode.
a. Platinum b. glass c. quinhydrone.

ix. The unit of cell constant in conductometry is _____
a. S b. $S\ cm^{-1}$ c. cm^{-1}

x. The unit of conductance is _____
a. S b. $S\ cm^{-1}$ c. cm^{-1}

xi. Conductivity cell contains _____ electrode.
a. silver b. platinized platinum c. nickel

xii. For acid base potentiometric titrations _____ is used as a reference electrode
a. quinhydrone b. calomel c. glass

xiii. F- test is used for _____ .
a. Rejection of data b. testing of significance c. obtaining best fitting line

xiv. The 4.0 d rule is used for _____ .
a. Rejection of result b. testing of significance c. comparison of means

xv. Gaussian curve is symmetrical around _____
a. s b. μ c. x

xvi. Least square method is used for _____
a. obtaining best fitting line b. testing of significance c. rejection of data

xvii. Range is the difference between ____
a. any two values b. two middle values c. highest and lowest numerical value

xviii. Liquid- liquid chromatography is based on _____.

VCD
MARKS:100

CHEMISTRY P-III S.Y.B.Sc SEM-IV ATKT Oct 2019

TIME : 3 Hrs

Q.4. Attempt the following (any four) (20)

A. What is null hypothesis? Outline a procedure for the application of null hypothesis to data.
B. Give the Gaussian distribution curve. Write its salient features.
C. Explain the Q-test for rejection of data.
D. Describe the method of averages with respect to line passing through origin.
E. Explain the 2.5 d and 4.0d rule.
F. Six samples were analyzed for its mercury content. The values obtained are 2.06, 2.16, 2.12, 1.93, 1.89 and 1.95. Calculate mean, median and mode.

Q.5. Attempt the following (any four) (20)

A. List the applications of Paper chromatography
B. Discuss the principle of electrophoresis. List its applications.
C. Discuss the construction and working of Quinhydrone electrode.
D. Discuss the advantages and limitations of potentiometric titrations.
E. Define: mean, median, mode, variance and average deviation.
F. Following values were obtained in a sample analysis 4.6, 4.7, 4.5, 4.9. on the basis of Q test, find whether 4.9 can be rejected or retained. (Given $Q_{table} = 0.76$)