

ANALYTICAL CHEMISTRY II

CHEM 452

(Laikipia university)

Prep quiz:

Q1. Define the following terms:

- (i) Raman spectroscopy
- (ii) Molecular ion peak in MS
- (iii) Capacity factor in chromatography
- (iv) Anti stokes shift
- (v) Thermol methods

Q2. Why is source modulation employed in atomic absorption spectroscopy?

Q3. Formulate the solid-state reaction of sodium bicarbonate when heated. It decomposes between 100° and 225°C with evolution of water and carbon dioxide. The combined loss of water and carbon dioxide totaled 36.6% by weight, whereas the weight loss due to carbon dioxide alone was found to be 25.4%.

Q4. For (i) normal-phase separation and (ii) reversed-phase separation predict the order of elution of ethyl acetate, diethyl ether and nitromethane

Q5. Suggest a type of liquid chromatography that would be suitable for the separation of

- (i) Ba^{2+} and Sr^{2+}
- (ii) High molecular weight glucosides
- (iii) $\text{CH}_3\text{CH}_2\text{OH}$ and $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

Q6. (a) The absorption edge of k lines for Ca is 3.064 Angstrom units. Calculate the minimum tube voltage required to excite this line.

b) To a sample of a protein hydrolysate, a chemist added 1.00mg of tryptophan, which was labelled with ^{14}C and exhibited a counting rate of 584CPM above background. After this labeled compound was thoroughly mixed with the sample, the mixture was passed through an ion-exchange column. The fraction of effluent containing only tryptophan was collected, and from it an 18.0mg sample of pure tryptophan was isolated. The isolated sample had a count of 204cpm

