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**Analytical Chemistr y**

**1st stage**

**College of Agricultural Engineering Sciences -**

**Department of Basic Scinces/ G3**

**Final Examination- 1st Semister 2022-2023**

**Q1/** Define five of the following terms: (20marks)

1.Solutions, 2.Analytes, 3.P-function ,4.Mole fraction, 5. Gas 6.Heterogeneous mixture

**Q2**/A- Choose the right answer for each of the following questions: (10marks)

1)……………… is a substance that cannot be separated into simpler substances by chemical means.

a) atom b) pure substance c) compound d) element

 2) ……………….Wet chemical methods such as precipitation, extraction, distillation, boiling or melting points, gravimetric and titrimetric measurements.

a) instrumental methods b) Classical Methods c)Analytical measurements

3- An example of homogenous solution is …………..

a) coal b) orange juice c)sugar dissolved in water d)both a&b

4) The …………….. is fundamental unit describing the amount of chemical species.

a) mole b) molarity c)molecular weight d) molality

5)-----------------The smallest unit of an element that retains a substance chemical activities :a)compound b)atoms c)matter d)non of them

**B**/ In our glass of iced tea we have added 2 tea spoon of sugar( C12H22O11 m.wt:342) the volume of the tea(water) is 300ml ,what is the mole fraction of the sugar in the tea solution ?(1tsp sugar are 20g). (10marks)

**Q3**.Give brief answers: (20marks)

**A**)What is the difference between elements and compounds?

**B**)Define acid &base according to the Lewis theory

**C**) Count three different physical means for separation of mixtures?

**D**)Matters can be existed at three states. What are they?

**Q4**. Solve the following problems: (40marks)

A) Determine the molality of a solution containing 7.4 g of ethylene glycol, HOCH2CHOH, dissolved in 125g of water.

**B**) Calculate the molar concentration of ethanol in an aqueous solution that contains 5.2 g of C2H5OH (46.07 g/mol) in 500 mL of solution

**C**)How many milliliters of 6M NaOH are needed to prepare 500ml of 2M NaOH?

**D**) What is the concentration in %v/v of a solution containing 2500 mL of methanol in5000ml solution?

The atomic weights **(g**/**mol): O=16, C=12, H=1**

 **Lec. Nawroz Omer**