Dougherty Valley HS Chemistry - AP
Solutions – Separation and Concentration Practice

Worksheet #1

Name: **Period:** **Seat#:**

Write the definition and/or equation for each term and/or describe how it the technique works:

1) Solute	**2)** Solvent	**3)** Solution	**4)** Homogeneous	**5)** Heterogeneous

6) Filtration	**7)** Decanting	**8)** Distillation	**9)** Paper Chromatography

10) TLC Chromatography	**11)** Column Chromatography	**12)** Volumetric Flask

13) Molarity (M)	**14)** Molality (m)	**15)** Mole Fraction (χ)	**16)** Weight Percent (%)

Each of these concentrations involves grams or moles of solute, solvent, or solution. Determine those values based on the information at the top of the chart.

Assume you dissolve 2.56 g of malic acid, $C_4H_6O_5$, in half a liter of water (500.0 g).
Work and answer
17) Molarity of acid in solution
18) Molality of acid in solution
19) Mole fraction of acid in solution
20) Weight percentage of acid in solution

Fill in the blanks in the table. Aqueous solutions are assumed. Show all work.

Compound	Molarity	Weight Percent	Mole Fraction
NaI	0.15		
C_2H_4OH		5.0	
$C_{12}H_{22}O_{11}$	0.15		

Separation Technique Questions – there are a few new ones mixed in! You can probably figure them out with common sense, otherwise look them up!

21) Can be used to separate a mixture of Fe and Cu fillings
- a) Magnetic separation
- b) Crystallization
- c) Evaporation
- d) Distillation

22) Could be used to separate aqueous $CuSO_4$ from water
- a) Evaporation
- b) Distillation
- c) Chromatography
- d) Decanting

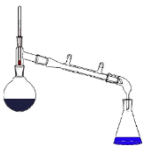
23) Could be used to separate tea from loose tea leaves
- a) Chromatography
- b) Decanting
- c) Filtration
- d) Crystallization

24) A method of separation used to separate a mixture that comprises solutes that dissolve in the same solvent
- a) Evaporation
- b) Filtration
- c) Chromatography
- d) Sublimation

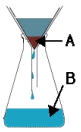
25) Liquids that do not mix may be separated by using
- a) a separating funnel
- b) an evaporating dish
- c) Liebig condenser
- d) a filter funnel

26) What type of chromatography should you use if you want to collect a purified sample of one of the components?
- a) Paper
- b) Thin Layer
- c) Column

27) What separation technique is shown below?



28) The diagram shows the apparatus for separating solid and water. What are the labelled parts?



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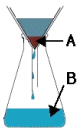
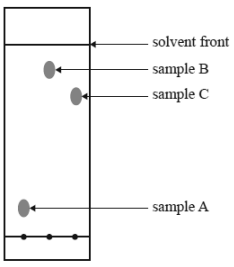


30) Which two would be most easily separated via distillation?
Boiling Pts:
1 = 30°C
2 = 60°C
3 = 120°C
4 = 110°C

31) The process of evaporating a liquid and then condensing the vapor by cooling it is known as
- a) filtration
- b) chromatography
- c) decanting
- d) distillation

32) Chromatography separates chemicals based on differences in
- a) mass
- b) polarity
- c) boiling point
- d) particle size

33) The thin layer chromatography plate shown below has a polar stationary phase. It was developed using hexane as the solvent. Which sample is the most polar?



Reminder
Spend some time doing practice calculations from the honors chem version of the solutions chapter! There are lots of good practice problems there, no use in duplicating them onto this worksheet!

http://tinyurl.com/54kt53z3