CH 362 Quiz 4.

Q1. hexane/water - immiscible
acetonitrile/methanol - miscible
acetone/water - miscible
methanol/water - miscible
toluene/water - immiscible
cyclohexane/water - immiscible
diethyl ether/water - immiscible

Q2. hexane
toluene
acetonitrile
water

increasing polarity ↓

Q3. Benzene elutes first, then toluene.

$\frac{376}{k_{Toluene}} = \frac{1.10 \cdot 252}{k_{Benzene}}$

$\frac{k_B}{k_T} = \frac{1.10 \cdot 252}{376} = 0.737 = \frac{[Benzene]}{[Toluene]}$

Q4. (b) It is best used for isocratic elutions.

Q5. $A_S = 95832$, $C_S = 24.9\,nM$
$A_x = 24422$

$\frac{24422}{[Analyte]} = 3.24 \cdot \frac{95832}{24.9}$ ← Concentration of alcohol

$[Analyte] = 1.958\,nM$

$= 1.958 \times 10^{-9} \frac{mol}{L} \times \frac{154.5\,g}{mol} \times \frac{1000\,mg}{1\,g} = 0.000302\,ppm.$