Name _____ Lab Partner _____

TA Name _____ Lab Section _____ Date _____

Freezing Point Depression

Data Table Worksheet

Data Table A. Measuring the Freezing Point of Stearic Acid

Mass of stearic acid	g
Measured freezing point of stearic acid (first trial)	°C
Measured freezing point of stearic acid (second trial)	°C
Average measured freezing point to stearic acid	°C

Data Table B. Freezing Point Depression by a Solute, Lauric Acid

Addition of lauric acid	First	Second
Mass of lauric acid – first addition	g	g
Mass of lauric acid – second addition	---- g	g
Total mass of lauric acid	g	g
Colligative molality (m_c) of the solution	m	m
Predicted ΔT_f (Assume kf is known to 3 significant figures, 4.50 °C/m)	°C	°C
Theoretical freezing point of the solution (In calculation use the last entry for your average freezing point from Data Table A to the 0.01 °C, not the literate value.)	°C	°C
Measured freezing point of the solution	°C	°C

Question 1: Do you expect the freezing point of this solution from the first addition of lauric acid to be at a higher or lower temperature than that of the pure solvent?

Question 2: Using your measured amounts of stearic acid and lauric acid for the first addition, calculate the colligative molality (m_c) of the resulting solution, the freezing point depression (ΔT_f) this molality should cause and the theoretical freezing point of the solution. Enter your results in Data Table B.

Question 3: How did your measured freezing point compare to your theoretical freezing point for the first addition?

% error = ((theoretical value – actual value) x 100%) / theoretical value

Question 4: Do you expect the freezing point of this solution from the second addition of lauric acid to be at a higher or lower temperature than that of the previous solution?

Question 5: Using your measured amounts of stearic acid and lauric acid for the second addition, calculate the colligative molality (m_c) of the resulting solution, the freezing point depression (ΔT_f) this molality should cause and the theoretical freezing point of the solution. Enter your results in Data Table B.

Question 6: How did your measured freezing point compare to your theoretical freezing point for the second addition?

% error = ((theoretical value – actual value) x 100%) / theoretical value