BCHM461 Graded Quiz #1 (20 points) **Due date/time: Mon Sept 16, 2024 by 11:59pm**

This is graded quiz #1. It contains two problems, 20 points total. You can type/paste your answers directly in the textbox on ELMS or upload scanned copies of your answers. If the latter, before uploading your work to ELMS please make sure all scanned/photocopied material has good resolution and is readable both on your computer and in ELMS. If the uploaded material is unreadable it will not be graded.

Problem 1. Consider a hypothetic reaction A $\rightleftarrows$ B that takes place at 25ºC. The reaction started with 180 mM of compound A and no B. The reaction reached the equilibrium when the molar concentration of A dropped to one-sixth of the initial concentration.

(A) Determine the equilibrium constant for the forward reaction.

(B) Determine the value of ΔG^0 for the forward reaction.

(C) Calculate the molar concentrations of A and B at the time point in the reaction when the ΔG for the forward reaction was -3 kJ/mol.

Problem 2. You need to prepare 100 mL of 50 mM acetate buffer with pH 5.2. You do this by mixing pre-calculated amounts/volumes of acetic acid and sodium acetate with pure water. Calculate how many milliliters of 1M acetic acid and 1M sodium acetate you need for this.