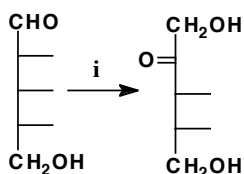
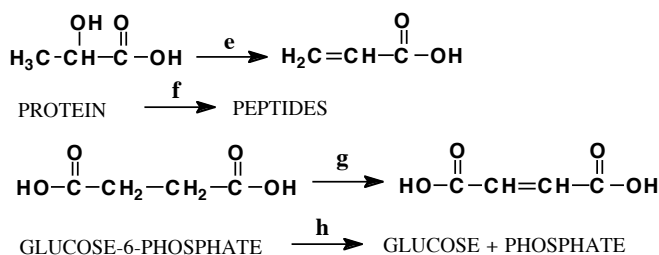
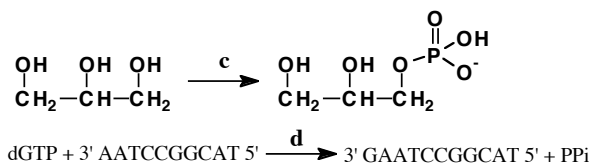
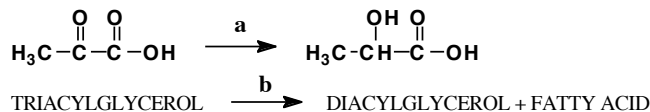


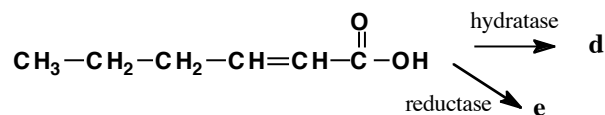
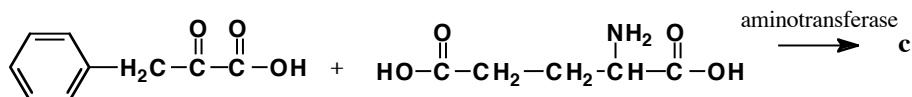
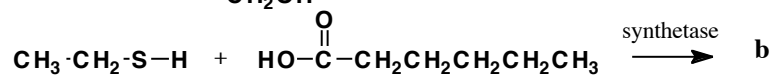
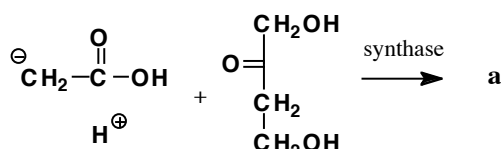


CHEMISTRY 260 BIOCHEMISTRY
Exam 3 PRACTICE QUESTIONS

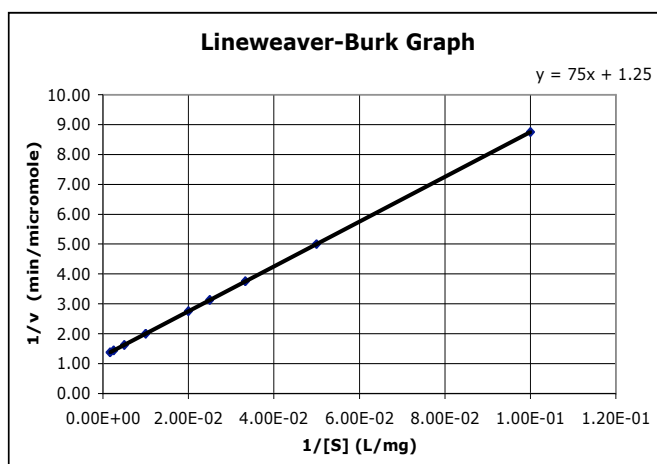
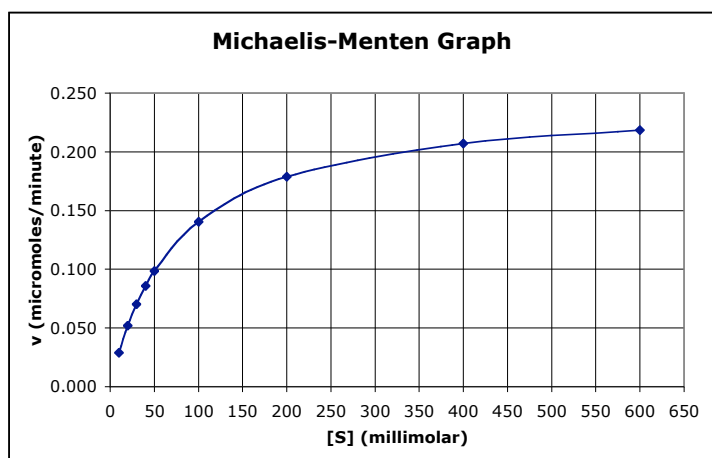
- 1) Book questions: 6.7 6.21 6.23 6.24 (6.5, 6.29, 6.30 see Figure 6.19) 6.36 7.5 14.5
- 2) Give the enzyme reaction name for the enzyme that would catalyze each of the following reactions. Indicate if any coenzymes are needed.



- 3) Draw the structures of the product molecule(s) for each of the following reactions. Indicate if any coenzymes are needed.



- 4) a) Determine the values of K_M and v_{max} for each of the following plots.



- b) If v_{max} for an enzyme reaction is 2.34 micromoles/sec, what percentage of enzyme is ES when the initial velocity = 1.17 micromoles/sec? when initial velocity = 2.00 micromoles/sec? when initial velocity = 0.444 micromoles/sec?

5) **COUPLING - ATP PRODUCTION**

Use $\Delta G^{0'}$ values from your handouts to answer the following questions.

- a) How many moles of ATP could be produced from ADP using the energy from combustion of glucose? How many moles if only 33% of the energy is used?

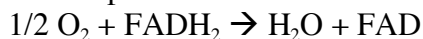
- b) How many moles of ATP could be produced from ADP using the energy from combustion of palmitic acid? How many moles if only 33% of the energy is used?

- c) How many moles of ATP could be produced from ADP using the energy from the reaction?



How many moles if only 33% of the energy is used?

- d) How many moles of ATP could be produced from ADP using the energy from the reaction?



How many moles if only 33% of the energy is used?

6) **COUPLING - ATP USE**

Use $\Delta G^{0'}$ values from your handouts to answer the following questions.

- a) Calculate $\Delta G^{0'}$ for hydrolysis of ATP to ADP coupled to forming an amide bond by condensation.

- b) Calculate $\Delta G^{0'}$ for hydrolysis of ATP to AMP, and PPi to 2 Pi coupled to forming a phosphoester bond by condensation.

- c) Calculate $\Delta G^{0'}$ for hydrolysis of ATP to ADP coupled to forming a thioester bond between coenzyme A and a fatty acid.

- d) Calculate $\Delta G^{0'}$ for hydrolysis of ATP to ADP coupled to transporting a non-ionic molecule across a membrane from a concentration of 0.400 mM to 10.0 mM at 310 K. ($R = 1.987 \times 10^{-3}$ kcal/mol)

$$\Delta G = RT \ln\left(\frac{[A]_{final}}{[A]_{initial}}\right)$$