Due date: To be collected at the beginning of class on Tuesday, December 1.

Note: The usual policy on cheating and plagiarism applies for this exercise.

1. This is a variation of problem 2 on page 518 (same in 2/e).

Consider a SOE in equilibrium.

a. Start by drawing a diagram showing this SOE in both production and consumption equilibria, where good $a$ is initial imported.

b. Now suppose this SOE experiences a biased technological progress which only affects only the production of good $a$ but not good $b$. Determine the effect of this technological change on:
   i. the consumption of goods $a$ and $b$;
   ii. the production of goods $a$ and $b$;
   iii. the quantities of goods $a$ and $b$ imported and exported;

c. Explain your answer in terms of income and substitution effects and illustrate your answer in the diagram. Again, when there is ambiguities in the result, discuss all possibilities and show only one case in the diagram.

2. This is a variation of problem 3 on page 518 (same in 2/e).

Consider a SOE in both production and consumption equilibria and good $a$ is imported. Now the government imposes an import quota on good $a$ which is binding, i.e., this economy cannot import as much good $a$ as before.

a. Start by drawing a diagram showing this SOE in equilibrium.

b. Show in the diagram the effect of the imposition of the import quota.

c. Determine the effects of the import quota on (i) production; (ii) consumption; (iii) import or export; of goods $a$ and $b$. 