1. **Circular Flow.** In the circular flow model of the economy, income is identically equal to expenditures. However, savings and taxes are called leakages. (25 points.)

   a. From what do they leak?
   b. Where do they go?
   c. What do leakages need to be balanced against?
   d. Imports are also a leakage. From what do they leak?
   e. Where do they go?

**ANSWERS:**

a. Income; they are a leakage in the income-to-consumption flow.

b. Savings leak into the financial markets; taxes leak into the government sector.

c. (Non-consumption) injections; specifically investment and government purchases.

d. Total sales or spending; they are a leakage in the spending-to-domestic production flow.

e. If exports exceed imports they leak into foreign financial markets (or the foreign exchange market); if imports exceed exports they leak into domestic financial markets (of the foreign exchange market).
2. **Inflation.** One of the costs associated with inflation is “inflation variability”. (25 points.)

   a. What does this mean? (Provide a definition.) (4 points.)
   b. Explain why this is considered a cost. (3 points.)
   c. What other 2 inflation costs are closely related to inflation variability? (4 points.)
   d. For the first of these, what does this mean? (Provide a definition.) (4 points.)
   e. Explain why this is considered a cost. (3 points.)
   f. For the second of these related costs, what does this mean? (Provide a definition.) (4 points.)
   g. Explain why this is considered a cost. (3 points.)

**ANSWERS:**

a. Inflation variability means that the higher inflation is, the more it fluctuates.

b. More variable inflation increases uncertainty. Because most people are risk adverse, nearly everyone is worse off.

c. Interest rate variability and output variability.

d. Interest rates are related to inflation rates. The higher is inflation the higher will be interest rates. The more variable is inflation the more variable will be interest rates.

e. The increase in uncertainty about inflation makes fixed nominal payment financial assets much riskier and this will increase both nominal and real interest rates. This will magnify the income redistribution effects when the inflation is unexpected.

f. Output variability means that actual real GDP will be more volatile when inflation is high. This results from higher and more volatile inflation, which raises uncertainty which reduces risk taking behavior, and higher and more volatile interest rates, which depresses investment activity.

g. More fluctuation in output result in more fluctuation in employment and income which lowers consumer welfare.
3. **Unemployment.** The unemployment rate can be decomposed into 3 parts. (24 points.)

a. List these 3 parts. (6 points.)
b. Define the first of these 3 and give a prominent characteristic of it. (3 points.)
c. What type of government policy could be used to minimize this type of unemployment? (3 points.)
d. Define the second of these 3 and give a prominent characteristic of it. (3 points.)
e. What type of government policy could be used to minimize this type of unemployment? (3 points.)
f. Define the third of these 3 and give a prominent characteristic of it. (3 points.)
g. What type of government policy could be used to minimize this type of unemployment? (3 points.)

**ANSWERS:**

a. Frictional; structural; cyclical

b. Frictional (or turnover): the transitional unemployment related to job search (following job loss, job leaving or (re-)entry into the labor force). Typically characterized by short spells of unemployment.

c. Government can promote (increase) labor market information through job banks, job fairs, computerized job listings and resume services, etc. Can also reduce the incentives to lengthen job search by cutting unemployment insurance payments or increase the incentives for quickly finding a job.

d. Structural (or mismatch): unemployment related to a skills mismatch between the unemployed workers and the available jobs. Typically characterized by long spells of unemployment.

e. Government programs for job retaining, skills enhancements, or tax incentives for companies to train workers.

f. Cyclical: unemployment due to the business cycle, i.e., the unemployment that exists when actual GDP is different from natural real GDP. Can be either positive or negative. Typically characterized by being closely related to the strength of the general economy; high job loss when the economy is weak, low job loss when the economy is strong.

g. Government can use monetary and/or fiscal policy to stabilize actual GDP near natural real GDP.
4. **Output Gap.** (24 points.)

I. Suppose that actual GDP is expected to grow this year by 2% while natural real GDP is expected to grow by 3%.

   a. What can you infer about what will happen to the unemployment rate? Explain your answer. (6 points.)
   b. What can you infer about what will happen to the inflation rate? Explain your answer. (6 points.)

II. Now suppose that actual GDP is expected to grow this year by 3% while natural real GDP is expected to grow by 2%. Further, suppose the actual unemployment rate is 5.5% while the natural unemployment rate is 5.0%.

   c. What can you infer about what will happen to the unemployment rate? Explain your answer. (6 points.)
   d. What can you infer about what will happen to the inflation rate? Explain your answer. (6 points.)

**ANSWERS:**

a. When actual GDP grows by 2% and natural real GDP by 3% the output ratio declines. Unemployment is inversely related to changes in the output ratio. Therefore, unemployment rises.

b. Although the output ratio declines we do not know whether the output ratio is above or below 100%. If the output ratio is above, inflation will continue to accelerate; if the output ratio is below, inflation will deceleration. However, because we do not know, we cannot infer anything about inflation.

c. When actual GDP grows by 3% and natural real GDP by 2% the output ratio rises. Unemployment is inversely related to changes in the output ratio. Therefore, unemployment declines.

d. The output ratio has increased but because actual unemployment is above the natural unemployment rate, the output ratio is still less than 100%. Therefore, inflation will decelerate.