1. (17 points) Suppose we do a survey and find that a typical consumer in Delaware buys the following goods each year. Note the prices are given as well.

<table>
<thead>
<tr>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods</td>
<td>Price</td>
<td>Goods</td>
</tr>
<tr>
<td>2 Pizzas</td>
<td>$10/each</td>
<td>2 Pizzas</td>
</tr>
<tr>
<td>10 gallons gas</td>
<td>$1/each</td>
<td>10 gallons gas</td>
</tr>
<tr>
<td>5 bowls chili</td>
<td>$1/each</td>
<td>5 bowls chili</td>
</tr>
</tbody>
</table>

a. Calculate the Consumer Price Index for each year. Use 2002 as the base year. Place your answer in the box.

\[ \text{CPI 2002} = \frac{(2 \times 10) + (10 \times 1) + (5 \times 1)}{3} = \frac{35}{3} \approx 11.67 \]

\[ \text{CPI 2003} = \frac{(2 \times 11) + (10 \times 1) + (5 \times 1)}{3} = \frac{37}{3} \approx 12.33 \]

\[ \text{CPI 2004} = \frac{(2 \times 12) + (10 \times 1) + (5 \times 1)}{3} = \frac{47}{3} \approx 15.67 \]

b. Please calculate the inflation rate for 2003 & 2004. Place your answer in the box.

\[ \text{Inflation Rate 2003} = \frac{12 - 11.67}{11.67} \approx 0.03 \text{ (3%)} \]

\[ \text{Inflation Rate 2004} = \frac{15.67 - 12}{12} \approx 0.31 \text{ (31%)} \]

What is substitution bias and does it exist here?

As prices change, as people change, people buy different goods. This is substitution bias.

d. Approximately, what is the annual current rate of inflation in the United States?

\[ \text{Current Rate of Inflation} \approx 2.9\% \]
*2. (6 points) Suppose the Federal Reserve purchases a U.S. Government Bond from you for $10,000.

a. What is the name of the Fed’s action?

Open Market Operation

b. Suppose you deposit the $10,000 in First Student Bank. Show this transaction on First Student Bank’s T-account.

<table>
<thead>
<tr>
<th>First Student Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>assets</td>
</tr>
<tr>
<td>Reserve $10,000</td>
</tr>
</tbody>
</table>

0

c. Suppose the reserve requirement is 20 percent. Show First Student Bank’s T-account if they loan out as much as they can.

<table>
<thead>
<tr>
<th>First Student Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>assets</td>
</tr>
<tr>
<td>Reserve $2,000</td>
</tr>
<tr>
<td>Loan $8,000</td>
</tr>
</tbody>
</table>

0

d. At this point, how much money has been created from the Fed’s policy action?

$10,000 from Fed’s bond purchase

$2,000 by bank’s loan

$5,000

e. What is the value of the money multiplier?

$$\frac{1}{ResReq} = \frac{1}{20\%} = \frac{1}{0.2} = 5$$

f. After infinite rounds of depositing and lending, how much money could be created from the Fed’s policy action?

$10,000 \times 5 = \$50,000
3. (17 points) Suppose the nation of Costa Brava makes only 2 products; corn and beans. The level of production and prices are given for 2003 and 2004. PLEASE USE 2003 AS THE BASE YEAR.

<table>
<thead>
<tr>
<th></th>
<th>Corn Production</th>
<th>Corn Prices</th>
<th>Bean Production</th>
<th>Bean Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>100 tons</td>
<td>5 pesos/ton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>110 tons</td>
<td>7 pesos/ton</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a) Calculate the nominal GDP for 2003

\[ (100 \times 5) + (50 \times 2) = 500 + 100 \]
\[ = 1500 \text{ pesos} \]

b) Calculate the nominal GDP for 2004.

\[ (110 \times 7) + (60 \times 25) = 770 + 1500 \]
\[ = 2270 \text{ pesos} \]

c) Calculate the GDP deflator for 2003

Note: Above is stated. 100 is base year.

100 by def'n

d) Calculate the GDP deflator for 2004.

\[ \frac{2270}{1500} \times 100 = 151.33 \]
\[ = 129.7 \]

2003 base

e) Calculate the real GDP for 2003.

\[ (100 \times 5) + (50 \times 2) = 500 + 100 \]
\[ = 1500 \]

f) Calculate the real GDP for 2004.

\[ (110 \times 5) + (60 \times 25) = 550 + 1200 \]
\[ = 1750 \]

g) Calculate the growth of the nominal GDP from 2003 to 2004

\[ \frac{2270 \text{ peso} - 1500 \text{ peso}}{1500 \text{ peso}} = \frac{770 \text{ peso}}{1500 \text{ peso}} \]
\[ = 0.5133 \]
\[ = 51.33\% \]

h) Was most of the growth in nominal GDP due to changes in price or to changes in real GDP? How can you tell?

Nom GDP was 51.3% higher, but 29.72 was due to change in prices so mostly change in price.
4. (12 points) Suppose the population of Devils Lake is distributed as follows

<table>
<thead>
<tr>
<th>Total Population</th>
<th>2,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed, at work</td>
<td>1,200</td>
</tr>
<tr>
<td>Employed, on vacation</td>
<td>50</td>
</tr>
<tr>
<td>Not employed</td>
<td>750</td>
</tr>
</tbody>
</table>

Of the 750 people who are not employed.

25 are laid-off cooks who have talked to employers about finding work as cooks, but employers tell them they are only hiring plumbers.
100 are people who asked friends about where they might work.
420 are retirees.
205 are stay-at-home parents

a. How many people are unemployed?

\[
\text{Unem} = 25 + 100 = 125
\]

b. What is the unemployment rate? (% please)

\[
\text{Unem Rate} = \frac{125}{2000} = 6.25\%
\]

c. What is the labor force participation rate? (% please)

\[
\text{Labor Force Participation Rate} = \frac{1375}{2000} = 68.75\%
\]

d. Are the cooks above considered unemployed? Explain.

Yes, they didn't have a job and actively searched for one.

If the cooks are unemployed, what type of unemployment are the cooks experiencing?

Structural. (Enough jobs, but none for cooks)

f. Cite the type or types of unemployment that are part of the natural rate of unemployment.

Structural
Frictional
5. (18 points) a. In the space to the right, please draw the Long Run Aggregate Supply (LRAS), Short Run Aggregate Supply (SRAS) and Short Run Aggregate Demand (SRAD) curves. Make sure you LABEL THE AXES and the curve.

b. Indicate the level of the natural rate of output with a star, i.e., ⋆.

c. Suppose the value of stocks falls by 20%. Show any changes in the LRAS, SRAS and SRAD. Label the new values with a "2" as a subscript, that is LRAS₂ or whatever.

d. What has happened to prices, output and unemployment?

   Prices: up √ down ✓ no change ✓ indeterminate (Circle One)

   Output: up ✓ down ✓ no change ✓ indeterminate (Circle One)

   Unemployment: up ✓ down ✓ no change ✓ indeterminate (Circle One)

e. If nothing was done, show where economy would wind up eventually. Use a "3" subscript to note any changes.

f. Cite one thing the Fed might do to get us to the situation in part e more quickly. (Be specific with your answer. Don't say "change" something but rather say "increase" or "decrease", etc.)

   - increase reserves
   - reduce discount rate
   - buy bonds

6. (6 points) a. In 1978 I bought a house in Delaware for $37,000. How much is that in today's dollars?

\[
\frac{189.9}{65.2} \times 37,000 = 107,765.2
\]

b. I sold the house in 2002 for $135,000. In real terms, did the value of the house increase? DEMONSTRATE.

\[
\frac{179.9}{65.2} \times 37,000 = 135,000 < 135,000
\]

Extra Credit. (You must have meet the attendance requirement and answer the following to get credit.) (2 points)

a. Currently in dollars, what is the size of the federal government's budget deficit?

\[
\text{Deficit} = 768 \beta - 570 \beta = 198 \beta
\]

b. What is the Laffer curve? How does it relate to President Bush's proposed policy changes?

Bush believes we can cut tax rates and not increase the deficit.
If nominal GDP in 2002 exceeds nominal GDP in 2001, then the production of output must have
a. risen.
b. fallen.
c. stayed the same.
d. risen or fallen because there is not enough information to determine what happened to real output.

*8 U.S. Gross Domestic Product (in contrast to Gross National Product) measures the production and income of
a. Americans and their factories no matter where they are located in the world.
b. people and factories located within the borders of the United States.
c. the domestic service sector only.
d. the domestic manufacturing sector only.
e. none of the above.

*9 Suppose your income rises from $19,000 to $31,000 while the CPI rises from 122 to 169. Your standard of
living has likely
a. fallen.
b. risen.
c. stayed the same.
d. You can't tell without knowing the base year.

*10. Which of the following best describes the rate of growth in productivity in the United States over the last fifty
years?
a. Productivity grew quickly in the 1950s and 1960s, more slowly from the early 1970s through 1995, and
then quickly again.
b. Productivity has been growing more slowly every decade since World War II.
c. Productivity has been growing more quickly every decade since World War II.
d. Productivity growth has been steady over the last 50 years.
e. Productivity grew slowly from the 1950s through the 1970s, and then began to accelerate, probably due to
advances in computer technology.

*11. If GDP = $1,000, consumption = $600, taxes = $100, and government purchases = $200, how much is saving
and investment?
(a) saving = $200, investment = $200
(b) saving = $300, investment = $300
(c) saving = $100, investment = $200
(d) saving = $200, investment = $100
(e) saving = $0, investment = $0

*12. If the government increases investment tax credits and reduces taxes on the return to saving at the same time,
a. the real interest rate should rise.
b. the real interest rate should fall.
c. the real interest rate should not change.
d. the impact on the real interest rate is indeterminate.

*13. According to the interest rate effect, aggregate demand slopes downward (negatively) because
a. lower prices increase the value of money holdings and consumer spending increases.
b. lower prices decrease the value of money holdings and consumer spending decreases.
c. lower prices reduce money holdings, increase lending, interest rates fall, and investment spending
increases.
d. lower prices increase money holdings, decrease lending, interest rates rise, and investment spending falls.

*14. Which of the following events shifts the short-run aggregate-supply curve to the right?
a. an increase in the government spending on military equipment
b. an increase in price expectations
c. a drop in oil prices
d. a decrease in the money supply
e. none of the above
15. An example of fiat money is
   a. gold.
   b. paper money.
   c. coins.
   d. cigarettes in a prisoner-of-war camp.

16. In the market for real output, the initial effect of an increase in the money supply is to
   a. shift aggregate demand to the right.
   b. shift aggregate demand to the left.
   c. shift aggregate supply to the right.
   d. shift aggregate supply to the left.

17. An increase in the price level causes the aggregate quantity of goods and services demanded to decrease because (assume wealth is money)
   a. wealth rises and interest rates rise.
   b. wealth rises and interest rates fall.
   c. wealth falls and interest rates rise.
   d. wealth falls and interest rates fall.

18. If natural resources were becoming scarcer, then we would expect their
   a. prices to be rising relative to other prices, as they have been.
   b. prices to be rising relative to other prices, but this has not occurred.
   c. known quantities to be falling, as they have been.
   d. known quantities to be falling, but they have not been.