1. (18 points)
This is the T-account for National Bank, the only commercial bank in the country. The reserve requirement, set by the Federal Reserve, is currently 20%. Use this information to answer the following questions.

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves</td>
<td>Deposits $2,000,000</td>
</tr>
<tr>
<td>Loans</td>
<td>$2,000,000</td>
</tr>
</tbody>
</table>

a. Assume that the bank is meeting the reserve requirement but does not hold any excess reserves. What is the level of reserves? Write your answer in the table above.

b. Assume that the bank meets the reserve requirement but does not hold any excess reserves. What is the level of loans? Write your answer in the table above.

c. The Federal Reserve buys $100,000 worth of bonds. Which of its three policies is the Fed using?

<table>
<thead>
<tr>
<th>Open Market</th>
<th>Operation</th>
</tr>
</thead>
</table>

d. If the Fed buys $100,000 bonds assume that all funds are deposited into accounts at National Bank. Show all the changes in the T-account above by crossing out any values that change and writing in the new values. Please assume the bank will still satisfy the reserve requirement.

e. What is the size of the money multiplier?

\[ \frac{1}{Res/Req} = \frac{1}{20} = \frac{1}{0.20} = 5 \]

f. Assume that the bank holds no excess reserves and all loans are redeposited in the bank. By how much will the money supply have increased after the money multiplier process is complete?

\[ \text{Money Multiplier} \times \text{Initial Change} \]

\[ \text{Money Multiplier} = 5 \]

\[ \text{Initial Change} = 500,000 \]

\[ \text{Money Supply Increase} = 5 \times 500,000 = 2,500,000 \]

g. What impact will the buying of bonds have on interest rates and loans made? (Cite the change of direction, if any, for each.)

<table>
<thead>
<tr>
<th>Interest Rates</th>
<th>Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down</td>
<td>Up</td>
</tr>
</tbody>
</table>
2. (3 points) I was reading the other night that gasoline averaged $1.16 a gallon in 1990. The CPI was equal to 130.7 in 1990 and stands at 202.9 right now. In today's terms how much is the $1.16 I paid in 1990 for a gallon of gas?

\[
\frac{\text{CPI in 1990}}{\text{CPI in 1990}} \times 1.16 = \frac{130.7}{202.9} \times 1.16 = 0.64
\]

3. (6 points) Six years ago in November 2000, the data for the United States showed.

<table>
<thead>
<tr>
<th>Employed Adults</th>
<th>135.4 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployed Adults</td>
<td>5.7 million</td>
</tr>
<tr>
<td>Adults Not in the Labor Force</td>
<td>69.5 million</td>
</tr>
</tbody>
</table>

a. What was value of the labor force participation rate in 2000?

\[
\text{LFP} = \frac{\text{Employed + Unemployed}}{\text{Adults}} = \frac{135.4 + 5.7}{200} = 0.702
\]

b. What was the unemployment rate in 2000?

\[
\text{Unemployment Rate} = \frac{\text{Unemployed}}{\text{Adults}} = \frac{5.7}{200} = 0.0285
\]

c. Was unemployment higher, lower or the same in 2000, compared to today? (Hmmm. You do have to know the current rate.)

Today is 4.4% Lower in 2000

4 (10 points) Suppose we look at the following data for Tigerland.

<table>
<thead>
<tr>
<th>Consumption</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxes</td>
<td>100</td>
</tr>
<tr>
<td>Gov't Spending</td>
<td>150</td>
</tr>
<tr>
<td>Investment</td>
<td>225</td>
</tr>
<tr>
<td>Net Exports</td>
<td>-60</td>
</tr>
<tr>
<td>Net Imports</td>
<td>60</td>
</tr>
</tbody>
</table>

a. What is the level of GDP?

\[
\text{GDP} = C + I + G + (X - M) = 600 + 225 + 150 + (-60) = 915
\]

b. What is the level of National Income?

\[
\text{NI} = \text{GDP} - \text{Taxes} = 915 - 100 - 150 = 665
\]

c. What is the level of Savings?

\[
\text{S} = \text{NI} - \text{Taxes} = 665 - 100 = 565
\]

d. What is the level of private savings? (Show your work)

\[
\text{Private Savings} = \text{S} - \text{Taxes} = 565 - 100 = 465
\]

e. What is the level of public savings? (Show your work.)

\[
\text{Public Savings} = \text{S} - \text{Taxes} - \text{Government Spending} = 565 - 100 - 150 = 315
\]
5. (13 points) The following table shows the prices and the quantities consumed in the country known as the University States. Suppose the base year is 2002. Also, suppose that 2002 is the year the typical consumption basket was determined.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price of Pencils</th>
<th>Quantity of Pencils</th>
<th>Price of Pens</th>
<th>Quantity of Pens</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>$1.00</td>
<td>200</td>
<td>$5</td>
<td>100</td>
</tr>
<tr>
<td>2003</td>
<td>$1.00</td>
<td>200</td>
<td>$10</td>
<td>50</td>
</tr>
<tr>
<td>2004</td>
<td>$1.50</td>
<td>250</td>
<td>$20</td>
<td>20</td>
</tr>
</tbody>
</table>

Remember, keep the basket of goods the same.

a. What is the value of the Consumer Price Index (CPI) in 2002?

\[
\text{CPI}_{2002} = \frac{\text{Cost of Goods Basket }_{2002}}{\text{Cost of Goods Basket }_{2002}} \times 100 = \frac{100}{100} \times 100 = 100
\]

b. What is the value of the CPI in 2003?

\[
\text{CPI}_{2003} = \frac{\text{Cost of Goods Basket }_{2003}}{\text{Cost of Goods Basket }_{2002}} \times 100 = \frac{1100}{100} \times 100 = 1100
\]

c. What is the value of the CPI in 2004?

\[
\text{CPI}_{2004} = \frac{\text{Cost of Goods Basket }_{2004}}{\text{Cost of Goods Basket }_{2002}} \times 100 = \frac{2110}{100} \times 100 = 2110
\]

d. What is the inflation rate in 2003?

\[
\text{Inflation Rate}_{2003} = \frac{\text{CPI}_{2003} - \text{CPI}_{2002}}{\text{CPI}_{2002}} \times 100 = \frac{1100 - 100}{100} \times 100 = 1000\%
\]

e. What is the inflation rate in 2004?

\[
\text{Inflation Rate}_{2004} = \frac{\text{CPI}_{2004} - \text{CPI}_{2003}}{\text{CPI}_{2003}} \times 100 = \frac{2110 - 1100}{1100} \times 100 = 90\%
\]

f. What type of bias do you observe in the CPI and corresponding inflation rates you generated above? Explain.

Substitution bias. The price of pens rose a great deal, yet and we kept 100 of them in the basket of goods even though people use fewer pens and more pencils.
6. (16 points) Suppose the following table records the total output and prices for an entire economy. Further, suppose the base year in the following table is 2003.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price of Soda</th>
<th>Quantity of Soda</th>
<th>Price of Jeans</th>
<th>Quantity of Jeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>$1.00</td>
<td>200</td>
<td>$10.00</td>
<td>50</td>
</tr>
<tr>
<td>2004</td>
<td>$1.00</td>
<td>220</td>
<td>$11.00</td>
<td>50</td>
</tr>
</tbody>
</table>

a. What is the value of nominal GDP in 2003?

b. What is the value of real GDP in 2003?

c. What is the value of the nominal GDP in 2004?

d. What is the value of real GDP in 2004?

e. What is the value of the GDP deflator in 2003?

f. What is the value of the GDP deflator in 2004?

h. Was the increase in nominal GDP from 2003 to 2004 mostly due to an increase in real output or due to an increase in prices? Explain.
Multiple choice – 2 points each.

7. If GDP rises,
   a. income and production must both rise.
   b. income and production must both fall.
   c. income must rise, but production may rise or fall.
   d. production must rise, but income may rise or fall.

8. Which of the following is NOT included in GDP?
   a. unpaid cleaning and maintenance of houses
   b. services such as those provided by lawyers and hair stylists
   c. the estimated rental value of owner-occupied housing
   d. production of foreign citizens living in the United States

9. Anna, a U.S. citizen, works only in Germany. The value added to production from her employment is included
   a. only in the U.S.GDP.
   b. only in German GDP.
   c. in both German and U.S. GDP.
   d. in neither German nor U.S. GDP.

10. Which of the following is counted in U.S. GDP?
    a. final goods and services purchased by the government
    b. both the peaches used by a bakery to make peach pies and the peach pies
    c. goods and services produce by U.S. citizens working in foreign countries
    d. None of the above are correct.

11. The producer price index measures the cost of a basket of goods and services
    a. typical of those produced in the economy.
    b. produced for a typical consumer.
    c. sold by producers.
    d. bought by firms.

12. Changes in the producer price index are often thought to be useful in predicting changes in
    a. the stock price index.
    b. the consumer price index.
    c. consumer confidence.
    d. the rate of output of goods and services.

13. The real interest rate tells you
    a. how fast the number of dollars in your bank account rises over time.
    b. how fast the purchasing power of your bank account rises over time.
    c. the number of dollars in your bank account.
    d. the purchasing power of your bank account.
14. A nation’s standard of living is measured by its
a. real GDP.
 b. real GDP per person.
 c. nominal GDP.
 d. nominal GDP per person.

15. The saws, lathes, and drill presses that woodworkers at Cedar Valley Furniture use to
produce chests and cabinets are called
a. human capital.
 b. physical capital.
 c. natural resources.
 d. technological knowledge.

16. If there are diminishing returns to capital,
a. capital produces fewer goods as it ages.
b. new ideas are not as useful as old ideas.
c. increases in the capital stock eventually decrease output.
d. increases in the capital stock increase output by even smaller amounts.

17. In the long run, a higher saving rate
a. cannot increase the capital stock.
 b. means that people must consume less in the future.
 c. increases productivity.
 d. None of the above are correct.

18. Which of the following would a macroeconomist consider as investment?
a. Earnest purchases a bond issued by Star-Kist.
b. Jerry purchases stock issued by IBM.
c. Alice builds a new restaurant.
d. All of the above are correct.

19. A higher interest rate induces people to
a. save more, so the supply of loanable funds slopes upward.
b. save less, so the supply of loanable funds slopes downward.
c. invest more, so the supply of loanable funds slopes upward.
d. invest less, so the supply of loanable funds slopes downward.

20. The decrease in labor-force participation rates among U.S. men since World War II can be
attributed to
a. longer schooling, an increase in stay-at-home dads, and earlier retirement and longer lives.
b. longer lives, laws that prevent mandatory retirement, and an increase in stay-at-home dads.
c. better unemployment insurance, laws that prevent mandatory retirement, and laws that prevent age discrimination in hiring.
d. easier job searches, better training, and laws that prevent mandatory retirement and age discrimination in hiring.
21. An increase in the minimum wage would
   a. increase both the quantity demanded and the quantity supplied of labor.
   b. decrease both the quantity demanded and the quantity supplied of labor.
   c. increase the quantity of labor demanded while decreasing the quantity supplied.
   d. decrease the quantity of labor demanded while increasing the quantity supplied.

22. The discount rate is
   a. the interest rate the Fed charges banks.
   b. one divided by the difference between one and the reserve ratio.
   c. the interest rate banks receive on reserve deposits with the Fed.
   d. the interest rate that banks charge on overnight loans to other banks.

23. The best part of Thanksgiving is
   a. Turkey
   b. Stuffing
   c. Cranberries
   d. Pies
   e. (Burp!) All of the above

Extra Credit – (2 points if answered correctly and not more than one absence.) The definition of unemployment in the United States requires the search for work. Give an example of one thing that counts as looking for work under the official definition.

- Asking an employer if they have any openings
- Asking a friend if there are job openings where they work
- Going to an employment agency and asking if they have any openings