Multiple Choice (each 3 points)

1. “Inflation tax” means that
   a. as taxes increase, the rate of inflation also increases.
   b. as the price level rises, taxpayers are pushed into higher tax brackets.
   c. in a hyperinflation, the chief source of tax revenue is often the printing of money.
   d. as the price level rises, the real value of money held by the public decreases.
   e. one’s tax liability increases with inflation

2. To end hyperinflation, a government trying to reduce its reliance on seigniorage would
   a. lower taxes and increase spending.
   b. lower interest rates.
   c. print more money.
   d. increase spending
   e. raise taxes and cut spending.

3. In 2015, the largest component of GDP was:
   a. consumption
   b. investment
   c. government purchases
   d. imports
   e. exports

4. All of the following transactions that took place in 2009 would be included in GDP for 2009 except the purchase of a
   a. ticket to see the movie 2001.
   b. 2001 Jeep Cherokee.
   c. book printed in 2009, entitled The Year 3000.
   d. year 2010 calendar printed in 2009.
   e. new house built in 2009.

5. When a firm sells a product out of inventory, investment expenditures ______ and consumption expenditures ______.
   a. decrease; remain unchanged
   b. remain unchanged; increase
   c. decrease; increase
   d. increase; decrease
   e. increase; increase
6. One possible benefit of moderate inflation is:
   a. better functioning labor markets.
   b. the elimination of menu costs.
   c. increased certainty about the future.
   d. a reduction in boredom attributable to the changing prices.
   e. a decrease in money velocity.

7. All of the following actions are investments in the sense of the term used by macroeconomists except:
   a. a corner candy store's buying a new computer.
   b. Sandra Santiago's buying 100 shares of IBM stock.
   c. IBM's building a new factory.
   d. John Smith's buying a newly constructed home.
   e. Ford putting 1000 unsold cars into inventory.

8. An increase in the price of imported goods will show up in:
   a. neither the CPI nor the GDP deflator.
   b. the CPI but not in the GDP deflator.
   c. the GDP deflator but not in the CPI.
   d. both the CPI and the GDP deflator.
   e. the GDP deflator for sure and maybe in the CPI depending on the good purchased.

9. All of the following actions increase government purchases of goods and services except the:
   a. federal government's sending a paycheck to the president of the United States.
   b. city of Boston's buying a library book.
   c. federal government's sending a Social Security check to Betty Jones.
   d. federal government's buying a Patriot missile.
   e. the state of Ohio builds a new road in Delaware county.

10. The inconvenience associated with reducing money holdings to avoid costs associated with inflation is called:
    a. fixed costs.
    b. menu costs.
    c. variable yardstick costs.
    d. inflation tax.
    e. shoeleather costs.

11. If increased immigration raises the labor force, the neoclassical theory of distribution predicts:
    a. the real wage will fall and the real rental price of capital will rise.
    b. both the real wage and the real rental price of capital will rise.
    c. the real wage will rise and the real rental price of capital will fall.
    d. both the real wage and the real rental price of capital will fall.
    e. the real wage will fall and the real rental price of capital will either rise or fall depending on how large a labor force increase is.
12. The number of households interviewed in the monthly employment survey of the U.S. Bureau of Labor Statistics is approximately:
   a. 600,000.
   b. 6 million.
   c. 6,000.
   d. 60,000.
   e. 600

13. If one looks at the relationship between inflation and money growth across countries, countries where money supply grows faster experience __________ rate of inflation, while if one looks at the relationship between money inflation and money growth in the US across time, periods with relatively higher money growth rate are also periods of relatively __________ inflation.
   a. lower; higher
   b. lower; lower
   c. higher; higher
   d. higher; lower
   e. higher; stable

14. Which of the following is an example of frictional unemployment?
   a. Elaine is willing to work for less than the minimum wage, but employers cannot hire her.
   b. Bill is qualified and would like to be an airline pilot, but airlines do not find it profitable to hire him at the wage established by the airline pilot's union.
   c. Joan is willing to work at the going wage, but there are no jobs available.
   d. Dave searches for a new job after voluntarily moving to San Diego.
   e. Mary is seeking a job as a nurse, but the high union wages in the industry have limited the number of jobs available.

15. If the fraction of employed workers who lose their jobs each month (the rate of job separation) is 0.01 and the fraction of the unemployed who find a job each month is 0.09 (the rate of job findings), then the natural rate of unemployment is
   a. 9 percent.
   b. about 11 percent.
   c. 10 percent.
   d. 1 percent.
   e. 19 percent.

16. In Morocco, the velocity of money is growing at 1 percent per year due to financial innovation, real GDP grows at 2 percent per year and the money supply grows at 5 percent per year. According to the quantity theory of money, what is the rate of inflation in Morocco?
   a. 1 percent
   b. 2 percent
   c. 3 percent
   d. 4 percent
   e. 5 percent
Short Answers

17. **Key Concepts** *(12 points)* Explain the following terms:
   a. Labor-force participation rate
   
   b. Crowding out
   
   c. Money neutrality
   
   d. Efficiency wages

18. **Inflation** *(6 points)* Interest rates played a part in the 1984 U.S. presidential debates. Some politicians claimed that interest rates rose over the 1981–83 period, while others claimed rates fell. Below is a table showing interest rates and annual inflation rates from 1981 to 1983.

<table>
<thead>
<tr>
<th>Year</th>
<th>Interest Rates</th>
<th>Annual Inflation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>14.03%</td>
<td>10.3%</td>
</tr>
<tr>
<td>1982</td>
<td>10.69%</td>
<td>6.2%</td>
</tr>
<tr>
<td>1983</td>
<td>8.63%</td>
<td>3.2%</td>
</tr>
</tbody>
</table>

Reconcile these conflicting claims.
19. **Unemployment** *(8 points)* In the US, the natural rate of unemployment rose during 1960-1984, but then fell between 1985 and 2006. Use i) the minimum wage; ii) union membership; iii) sectoral shifts; and iv) demographics to explain this trend.

20. **Cobb-Douglass** *(10 points)* Assume that the production function is given by \( Y = AK^{0.5}L^{0.5} \), where \( Y \) is GDP, \( K \) is capital stock, and \( L \) is labor. The parameter \( A \) is equal to 10. Assume also that capital is 100, labor is 400, and both capital and labor are paid their marginal products.
   a. *(2 points)* What is \( Y \)?
   b. *(3 points)* What is the real wage of labor?
   c. *(3 points)* What is the real rental price of capital (the amount of output paid per unit of capital)?
   d. *(2 points)* What would happen to the real wage and the real rental rate of capital if a technological advance improves the production function?
21. **Reagan’s 1980s Policies (10 points)** In the early 1980s President Ronald Reagan increased defense spending and implemented large tax cuts at the same time. Use the model of the long-run economy to analyze the effects of these policies.

   a. (7 points) Use the long-run model of the economy to graphically illustrate the impact of Reagan’s policies. Indicate what the model predicts will happen to i) public saving, ii) national saving, iii) real interest rate, and iv) investment.

   ![Graph showing the long-run model of the economy with public saving (S), national saving (S), investment (I), real interest rate (r), and the equilibrium point (E)].

<table>
<thead>
<tr>
<th>Variable</th>
<th>Increases (↑), decreases (↓) or remains unchanged (--)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Saving</td>
<td></td>
</tr>
<tr>
<td>National Saving</td>
<td></td>
</tr>
<tr>
<td>Real Interest Rate</td>
<td></td>
</tr>
<tr>
<td>Investment</td>
<td></td>
</tr>
</tbody>
</table>

   b. (3 points) Below you are given the actual data. How do model results fit with data and if there are any differences, explain why data is not consistent with the model. Note: Public Saving, National Saving and Investment are expressed as a percent of GDP. All figures are averages over the decade shown.

<table>
<thead>
<tr>
<th>Variable</th>
<th>1970s</th>
<th>1980s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Saving</td>
<td>-2.2</td>
<td>-3.9</td>
</tr>
<tr>
<td>National Saving</td>
<td>19.6</td>
<td>17.4</td>
</tr>
<tr>
<td>Real Interest Rate</td>
<td>1.1</td>
<td>6.3</td>
</tr>
<tr>
<td>Investment</td>
<td>19.9</td>
<td>19.4</td>
</tr>
</tbody>
</table>
22. **GDP (10 points)** Suppose a woman marries her butler. After they are married, her husband continues to wait on her as before, and she continues to support him as before (but as a husband rather than as an employee). How does the marriage affect GDP? How do you think it should affect GDP?

**Extra Credit**
If you have not missed more than one class since the beginning of the semester, you can answer the question below and earn 3 points extra credit.

23. GDP is the market value of all ______ goods and services produced within an economy in a given period of time.
   a. consumer
   b. final
   c. intermediate
   d. used
   e. final and intermediate
18. Using the Fisher effect, the nominal interest rate fell from 14 percent to 8.6 percent over the period, but the *ex post* real rate rose from 3.73 percent to 5.43 percent.

19. In the US, the natural rate of unemployment rose during 1960-1984, but then fell between 1985 and 2006. This trend can be explained by looking at the i) the minimum wage; ii) union membership; iii) sectoral shifts; and iv) demographics. Neither of the four factors alone explain the trend in the natural rate of unemployment, but when taken together, these factors do a fine job explaining the trend.

i) the trend in the minimum wage is similar to that of the natural rate of unemployment.

ii) Since the early 1980s, the natural rate of unemployment and union membership have both fallen. But, from 1950s to about 1980, the natural rate rose while union membership fell.

iii) During the 1970s, oil prices were volatile, which caused sectoral shifts, i.e. restructuring industries to use less energy. From mid 1980s to early 2000s, oil prices less volatile, so fewer sectoral shifts.

iv) 1970s: The Baby Boomers were young and young workers change jobs more frequently (high value of \( s \)). Late 1980s through today: Baby Boomers aged and middle-aged workers change jobs less often (low \( s \)).
20.a. 2000
20.b. 2.5
20.c. 10

21. a. As $G$ increased and $T$ decreased, public saving $(T-G)$ decreased. At the same time, national saving $(S=Y-C-G)$ decreased.

\[
\begin{align*}
&\text{i) public saving - decreased} \\
&\text{ii) national saving – decreased} \\
&\text{iii) interest rate - increased} \\
&\text{iv) investment - decreased}
\end{align*}
\]

21.b. The model predicts all variables except investment well. The model predicts that investment will decrease by the same amount as national saving, but data does not support that. One possible reason is that we are not in a closed economy and a decrease in domestic saving was accompanied by a larger inflow of saving from abroad, possibly because of a higher interest rate. Hence, investment did not decrease by the full amount of a decrease in national saving.

22. When a woman marries her butler, GDP falls by the amount of the butler’s salary. This happens because measured total income, and therefore measured GDP, falls by the amount of the butler’s loss in salary. If GDP truly measured the value of all goods and services, then the marriage would not affect GDP since the total amount of economic activity is unchanged. Actual GDP, however, is an imperfect measure of economic activity because the value of some goods and services is left out. Once the butlers work becomes part of his household chores, his services are no longer counted in GDP. As this example illustrates, GDP does not include the value of any output produced in the home. Similarly, GDP does not include other goods and services, such as the imputed rent on durable goods (e.g., cars and refrigerators) and any illegal trade.

23. B