REVIEW PROBLEMS #1
For Friday January 21

I. **Multiple Choice Questions:**

Choose the one alternative that best completes the statement or answers the question.

1. Okun's law illustrates the relationship between:
   a. the unemployment rate and the labor participation rate
   b. changes in the unemployment rate and GDP growth
   c. the inflation rate and the unemployment rate
   d. the rate of change of the GDP deflator and that of the CPI
   e. aggregate demand and aggregate supply

2. Which of the following is NOT a component of consumption
   a. purchase of a new home
   b. purchase of a refrigerator
   c. housing services
   d. education services
   e. holiday cruise

3. Velocity is:
   a. the ratio of nominal income to money.
   b. the ratio of money to nominal income.
   c. the ratio of money to bonds.
   d. the ratio of wealth to money.
   e. the ratio of money to wealth.

4. If a bond offering to pay $200 in one year is to have a 20% interest rate, then its price must be:
   a. $83.33.
   b. $140.
   c. $160.
   d. $166.66.
   e. $180

5. The value-added means:
   a. a firm’s profits on its sales.
   b. the value of the labor inputs in production.
   c. the value of a firm’s output less the value of its costs.
   d. the value of a firm’s output less the value of the intermediate goods that the firm purchases.
   e. none of the above.

6. Which of the following is a “flow” variable?
   a. financial wealth
   b. nominal money supply
   c. saving
   d. real money supply
   e. none of the above
7. If nominal GDP rises from $5 trillion to $6 trillion, while the GDP deflator rises from 1.0 to 1.1, then the percentage change in real GDP is (1 decimal rounding)
   a. 10.0%.
   b. 0.0%.
   c. 1.1%.
   d. 9.1%.
   e. 20.0%.

8. A “closed Economy” is one in which
   a. government spending equals taxes.
   b. exports equal imports.
   c. there are no imports or exports.
   d. there is no government spending or taxes.
   e. there is no saving.

9. The marginal propensity to consume and the marginal propensity to save must
   a. be equal to each other.
   b. sum to exactly one.
   c. sum to less than one.
   d. sum to more than one.
   e. have the ratio 2 to 1.

10. The demand for money
    a. varies inversely with the interest rate.
    b. varies inversely with income.
    c. is equal to the demand for bonds.
    d. has the same absolute value, but opposite sign, as the demand for bonds.
    e. is infinite—people always want more money.

11. Suppose that the Fed wishes to conduct contractionary monetary policy. Given this we would expect which of the following to occur?
    a. an open market purchase of bonds and a reduction in the interest rate
    b. an open market sale of bonds and an increase in the interest rate
    c. an open market purchase of bonds and an increase in the interest rate
    d. an open market sale of bonds and a reduction in the interest rate
    e. none of the above

12. Which of the following would increase equilibrium GDP?
    a. an increase in the marginal propensity to save.
    b. an increase in taxes.
    c. an cut in government spending.
    d. an increase in consumer’s confidence
    e. none of the above
II. Problems

Problem 1

You are given the following data:

\[ W = \$50,000 \]
\[ Y = \$60,000 \]
\[ M_d = PY(0.35-i) \]

W is wealth, Y income, P the price level =1, \( M_d \) money demand and i interest rate.

a. Calculate the demand for money and the demand for bond \( B_d \) when \( i = 0.05 \)

\[ M_d = \text{__________} \quad B_d = \text{__________} \]

when \( i = 0.10 \)

\[ M_d = \text{__________} \quad B_d = \text{__________} \]

b. What is the impact of an increase in the interest rate on the money demand? on the demand for bonds?

Show the equation for the demand for bonds

c. i. Assume that \( i = 0.10 \)

What happens to the demand for money when income drops by 50%?

\[ M_d \text{ increases or decreases by } \$$ \text{__________} \]
\[ \text{i.e. by } \% \text{__________} \]

ii. Now assume that \( i = 0.05 \)

What happens to the demand for money when income drops by 50%?

\[ M_d \text{ increases or decreases by } \$$ \text{__________} \]
\[ \text{i.e. by } \% \text{__________} \]

iii. Is the impact of a change in income on money demand dependent on the interest rate?
Problem 2

The face value of a 1 year bond is $1000 (the amount it promises to pay in a year)

a. Given possible prices today for the bond, calculate the corresponding interest rates.

<table>
<thead>
<tr>
<th>Price</th>
<th>Interest rate</th>
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<tbody>
<tr>
<td>900</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td></td>
</tr>
<tr>
<td>700</td>
<td></td>
</tr>
</tbody>
</table>

b. What is the equation showing the relation between the price of bonds and the interest rate?

c. If the interest rate is 8% what is the price of the bond?

Problem 3

Suppose that money demand is given by the following equation:

\[ M^d = PY(0.35 - i) \]

Where Y income = 400, P the price level =1, and i the interest rate.

The money supply \( M^s = 100 \)

a. Calculate the equilibrium rate of interest

\[ i = \text{__________} \%

b. If the Fed want to increase the interest rate by 5%

should the Fed increase or decrease the money supply?
Problem 4

Assume CU = 0 and the reserve ratio = 10%

The demand for money is \( M^d = PY(0.8-4i) \) with \( P = 1 \)

The monetary base \( H = \$100 \text{ billion} \) and \( Y = \$5 \text{ trillion} \)

a. Calculate the demand for \( H \)

b. Calculate the equilibrium interest rate (use the supply and demand for \( H \))

c. What is the supply of money in the economy?

d. Now use the supply and demand for money in the economy to calculate the equilibrium rate of interest in the economy.

Hopefully, you get the same equilibrium interest rate!

e. What happens to the interest rate is the Fed increases \( H \) by \$300.

Calculate it

f. Starting from the original equations, calculate the new interest rate is the money supply in the economy increases by \$3000.