Note: Each multiple-choice question is worth 4 points. Problems 20, 21, and 22 carry 10, 8, and 10 points, respectively.

1) Which of the following are true statements?

A) Income is a flow of earnings per unit of time.
B) Wealth is the total collection of pieces of property that are a store of value.
C) Money is a stock; it is a certain amount at a given point in time.
D) All of the above are true.

2) The present value of a lottery prize paying $1 million each year for twenty years, discounted at a rate of 10 percent, is worth

A) exactly $20 million.
B) less than $10 million.
C) between $20 million and $30 million.
D) $18 million.
E) more than $30 million.

3) For a bond selling for $4000, with a par value of $5000 and a coupon rate of 10 percent, the current yield is

A) 5 percent.
B) 10 percent.
C) 12.5 percent.
D) 20 percent.
E) 25 percent.

4) Which of the following statements about financial markets and securities are true?

A) A corporation acquires new funds only when its securities are first sold in the primary market.
B) Money market securities are usually more widely traded than longer-term securities and so tend to be more liquid.
C) Many common stocks are traded over-the-counter, although the largest corporations usually have their shares traded at organized stock exchanges such as the New York Stock Exchange.
D) All of the above are true.
E) Only A and B of the above are true.

5) Prices and returns for _____ bonds are more volatile than those for _____ bonds.
   A) long-term; long-term   B) short-term; long-term
   C) long-term; short-term   D) short-term; short-term

6) If an individual moves money from a small-denomination time deposit to a checking
   deposit account,
   A) M1 increases and M2 stays the same.
   B) M1 stays the same and M2 increases.
   C) M1 stays the same and M2 stays the same.
   D) M1 increases and M2 decreases.

7) (Bonus question) The purpose of the disclosure requirements of the Securities and
   Exchange Commission is to
   A) prevent bank panics.
   B) protect investors against financial losses.
   C) increase the information available to investors.
   D) improve monetary control.
   E) all of the above.

8) Which of the following is most likely to result from a stronger dollar?
   A) Americans will purchase fewer foreign goods.
   B) U.S. goods exported abroad will cost more in foreign countries, and so foreigners will
      buy fewer of them.
   C) U.S. goods exported abroad will cost less in foreign countries, and so foreigners will
      buy more of them.
   D) U.S. goods exported abroad will cost more in foreign countries and so foreigners will
      buy more of them.
9) A rising stock market index due to higher share prices

A) decreases the amount of funds that business firms can raise by selling newly-issued stock.
B) increases people's wealth and as a result may increase their willingness to spend.
C) increases people's wealth, but is unlikely to increase their willingness to spend.
D) both A and C of the above.

10) If the interest rates on all bonds fall from 7 to 6 percent over the course of the year, which bond would you prefer to have been holding?

A) A bond with one year to maturity
B) A bond with ten years to maturity
C) A bond with five years to maturity
D) A bond with twenty years to maturity

11) An example of economies of scale in the provision of financial services is

A) providing depositors with a variety of savings certificates.
B) spreading the cost of borrowed funds over many customers.
C) spreading the cost of writing a standardized contract over many borrowers.
D) investing in a diversified collection of assets.
E) all of the above.

12) Increasing transactions costs of selling an asset make the asset

A) more valuable.
B) more fungible.
C) less liquid.
D) more moneylike.
E) more liquid.

13) An important function of secondary markets is to

A) make it easier for governments to raise taxes.
B) raise funds for corporations through the sale of securities.
C) create a market for bank demand deposits.
D) make it easier to sell financial instruments to raise cash.
E) create a market for newly constructed houses.
14) If the level of prices falls by 50 percent, the value of money

A) falls by 100%.
B) doubles.
C) falls by 50%.
D) rises by 50%.
E) remains unchanged.

15) In the early 1980s, a particular bank in Oklahoma developed a reputation of readily providing loans to borrowers for the purpose of exploring for oil deposits. Many of these loans were never repaid, because this bank failed to address the

A) risk-sharing problem.
B) regulatory avoidance problem.
C) moral hazard problem.
D) adverse selection problem.
E) free-rider problem.

16) Adverse selection is a problem associated with equity and debt contracts arising from

A) the lender's inability to legally require sufficient collateral to cover a 100% loss if the borrower defaults.
B) the borrower's lack of incentive to seek a loan for highly risky investments.
C) the lender's relative lack of information about the borrower's potential returns and risks of his investment activities.
D) none of the above.

17) Of the following measures of interest rates, which is considered by economists to be the most accurate?

A) The yield to maturity      B) The coupon rate
C) The yield on a discount basis  D) The current yield

18) Which of the following are true statements?

A) The conversion of a barter economy to one that uses money increases efficiency by increasing the cost of exchange.
B) The conversion of a barter economy to one that uses money increases efficiency by reducing transactions costs.
C) The conversion of a barter economy to one that uses money increases efficiency by increasing the cost to those who wish to specialize.
D) All of the above are true.
19) Which of the following are true statements?

A) The average price of goods and services in an economy is called the inflation rate.
B) When the average price of goods and services in an economy increases, the inflation rate increases.
C) Those countries with the highest inflation rates are also the ones with the highest money growth rates.
D) All of the above are true statements.
E) Only A and B of the above are true statements.
KEY
1) D
2) B
3) C
4) D
5) C
6) A
7) C
8) B
9) B
10) E
11) C
12) C
13) D
14) B
15) D
16) C
17) A
18) B
19) C
20. a) You are considering two investment opportunities for a period of 2 years:

Option A - you can invest in a 2-year time deposit in your bank at the annual interest rate of 9.5%.
Option B - you can purchase one-year discount bond with a Face Value of $10,000 and then reinvest the proceeds into another one-year discount bond. The current interest rate is 9%. At the end of the first year you expect that the interest rates will rise to 11%. (Hint: assume that at the end of the first year, someone will sell you a bond with such Face Value that you can reinvest all your available funds).

Calculate the expected annual interest rate on your investment for the entire 2-year period (with the reinvestment) and decide which option would you prefer. (6 points)

b) Now, assume that the interest rates after the first year rose only to 9.8%. Are you still better off than if you would have invested in the bank? Why? (Hint: it is possible to answer this question without any calculations). (4 points)
21. A 1-month treasury note with a face value of $1000 is selling at $990 on a discount basis.

(a) If the annual rate of inflation is expected to be 5%, what is the expected **annual** real interest rate? (6 points)

(b) Will the investor (person buying the note) be better off, if the actual inflation turns out to be 6% instead? (2 points)
22. Suppose you buy a consol with a coupon of $100, and the current interest rate is 7%.

(a) What is its selling price? (4 points)
(b) Exactly 1 year later, the interest rates rise to 10%. If your holding period is 1 year i.e.,
you have to sell this bond after one year, what price will you end up selling at? Show
your work. (2 points)
(c) What is your effective rate of return in part (b)? Show your work. (4 points)
20. a) You are considering two investment opportunities for a period of 2 years:

Option A - you can invest in a 2-year time deposit in your bank at the annual interest rate of 9.5%.
Option B - you can purchase one-year discount bond with a Face Value of $10,000 and then reinvest all the proceeds into another one-year discount bonds. The current interest rate is 9%. At the end of the first year you expect that the interest rates will rise to 11%.

Calculate the expected annual interest rate on your investment for the entire 2-year period (with the reinvestment) and decide which option would you prefer. (6 points)

Answer: There are several ways to approach this question. Intuitively, if you look at the two interest rates (first year 9%, second year 11%) we can see that the annual interest rate for the entire 2-year period should be very close to their average, 10%. As a result, we may already conclude that the option B is better. To be more precise, we may do the following calculations:

\[
FV = PV \times (1 + i_1) \times (1 + i_2) = \$1 \times (1 + 0.09) \times (1 + 0.11) = \$1.2099
\]

Now, we calculate annual rate for the entire 2-year period:

\[
PV = \frac{FV}{(1 + i)^2} \Rightarrow i = \sqrt[2]{\frac{\$1.2099}{\$1}} - 1 = 9.99\% - 10\%
\]

Note that I haven’t used anywhere the fact that we are investing in a bond. If we do use that information, the calculations will look as follows:

First, we calculate the price of the first bond:

\[
PV = \frac{\$10,000}{(1 + 0.09)} = \$9,174.3
\]

and future value at the end of year two after reinvesting all of the proceeds:

Future Value \(_{t=2}\) = Face Value \((1 + i_2) = \$10,000 \times (1 + 0.11) = \$11,100

Now, we obtain the annual interest rate:

\[
PV = \frac{\text{Future Value}}{(1 + i)^2} \Rightarrow i = \sqrt[2]{\frac{\$11,100}{\$9,174.3}} - 1 = 9.99\% - 10\%
b) Now, assume that the interest rates after the first year rose only to 9.8%. Are you still better off than if you would have invested in the bank? Why? (Hint: it is possible to answer this question without any calculations). (4 points)

In part a) we saw that when interest rates are 9% and 10% the 2-year annual interest was very close to 10%. We can infer that when the interest rates will be 9% and 9.8% the 2-year annual rate will be very close to their average 9.4%. As a result, the bank would have been a better choice.
21. A 1-month treasury note with a face value of $1000 is selling at $990 on a discount basis.

(a) If the annual rate of inflation is expected to be 5%, what is the expected real interest rate? (6 points)

**Answer:** We can use one of the following formulas (Although they produce similar results, the first one does not assume compounding and thus the resulting interest rate is smaller):

\[
\text{Price} = \text{PV} = \frac{FV}{1 + \frac{i}{12}} \Rightarrow i = 12\left(\frac{1000}{990} - 1\right) = 12.12\%
\]

or the alternative formula:

\[
\text{Price} = \text{PV} = \frac{FV}{(1 + i)^{12}} \Rightarrow i = \left(\frac{1000}{990}\right)^{\frac{1}{12}} - 1 = 12.81\%
\]

Then the real interest rate is:

\[
i_{\text{real}} = i_{\text{nominal}} - \pi_{\text{Expected}} = 12\% - 5\% = 7\%
\]

(b) Will the investor (person buying the note) be better off, if the actual inflation turns out to be 6% instead? (2 points)

\[
i_{\text{real}} = i_{\text{nominal}} - \pi_{\text{Actual}} = 12\% - 6\% = 6\%
\]

Then investor will be worse off (will receive less in real terms).
22. Suppose you buy a consol with a coupon of $100, and the current interest rate is 7%.

(a) What is its selling price? (4 points)

\[
\text{Price} = \frac{C}{i} \Rightarrow \text{Price} = \frac{\$100}{0.07} = \$1428.57
\]

(b) Exactly 1 year later, the interest rates rise to 10%. If your holding period is 1 year i.e., you have to sell this bond after one year, what price will you end up selling at? Show your work. (2 points)

\[
\text{Price} = \frac{C}{i} \Rightarrow \text{Price} = \frac{\$100}{0.1} = \$1000
\]

(c) What is your effective rate of return in part (b)? Show your work. (4 points)

\[
\text{Return} = \frac{C + P_{t+1} - P_t}{P_t} = \frac{\$100 + \$1000 - \$1428.57}{\$1428.57} = -23\%
\]