

**Multiple choice – 3 points each – 30 points total**

1. Which of the following are true? All else equal, present values \_\_\_\_\_.
  - I. increase as the discount rate increases
  - II. increase the further away in time the future value is
  - III. are always smaller than the future value when the number of periods and interest rate are positive
  - A. I only
  - B. I and II
  - C. II and III
  - D. III only
  - E. I and III
  
2. Last year a firm had a profit margin of 7%. This year the profit margin is 6%. Sales remained constant. Which one of the following statements is correct based on this information?
  - A. The return on assets declined.
  - B. The return on equity increased.
  - C. The net income increased.
  - D. The price earnings ratio decreased.
  - E. The interval measure decreased.
  
3. Which of the following will increase the amount of the cash flow to creditors?
  - A. A new long-term loan.
  - B. The early payment of an accounts payable.
  - C. An early payoff of a long-term loan.
  - D. A decrease in the rate of interest charged on a loan.
  - E. The payment of a cash dividend.
  
4. Which one of the following is designed to benefit the corporation rather than the bondholder?
  - A. Positive covenant.
  - B. Sinking fund.
  - C. Call provision.
  - D. Negative covenant.
  - E. Call premium.
  
5. When would a firm's return on equity equal the return on assets?
  - A. Whenever a firm's return on equity is equal to 100%.
  - B. Whenever a firm has no long-term debt.
  - C. Whenever a firm's debt to equity ratio is equal to one.
  - D. Whenever a firm's total debt ratio is equal to zero.
  - E. Whenever a firm's long-term debt ratio is equal to zero.

6. A company has a current ratio of 2, a quick ratio of 1.8, net income of \$180,000, a profit margin of 10%, and an accounts receivable balance of \$150,000. What is the firm's days' sales in receivables?
- A. 43 days
  - B. 24 days
  - C. 50 days
  - D. 16 days
  - E. 30 days
7. Which one of the following actions is the best example of an agency problem?
- A. Paying management bonuses based on the number of store locations opened during the year.
  - B. Paying management bonuses based on the current market value of the firm's stock.
  - C. Accepting a project that enhances both management salaries and the market value of the firm's stock.
  - D. Requiring stockholders approval of all management compensation decisions.
  - E. Basing management bonuses on the attainment of specific financial goals.
8. All else the same, a(n) \_\_\_\_\_ will decrease the required return on a bond.
- A. call provision
  - B. lower bond rating
  - C. sinking fund
  - D. increase in inflation
  - E. increase in the size of the bond issue
9. You have just won the lottery and have been presented with two payments options. Assuming that the interest rate is positive, which option should you choose?
- | <u>Year</u> | <u>Option A</u> | <u>Option B</u> |
|-------------|-----------------|-----------------|
| 0           | \$100,000       | \$100,000       |
| 1           | \$ 40,000       | \$ 50,000       |
| 2           | \$ 60,000       | \$ 50,000       |
| 3           | \$ 50,000       | \$ 50,000       |
| 4           | \$ 50,000       | \$ 50,000       |
- A. Option A
  - B. Option B
  - C. Both options are the same.
  - D. Insufficient information.
10. An equity multiplier of 1.64 means that for every \$1 the firm raises in new equity, the firm can:
- A. acquire an additional \$1.64 in new assets.
  - B. acquire an additional \$1.64 in new debt.
  - C. earn \$1.64 in additional profits.
  - D. earn \$1.64 in additional profits per share.
  - E. pay \$1.64 in additional dividends per share.

**Partial Credit Problems --- SHOW ALL WORK**

**Problem 1 (11 points)** You are planning to save for retirement over the next 30 years. To save for retirement, you will invest \$700 a month in a stock account in real dollars and \$300 a month in a bond account in real dollars. The effective annual return of the stock account is expected to be 11 percent, and the bond account will earn 7 percent. When you retire, you will combine your money into an account with a 9 percent effective return. The inflation rate over this period is expected to be a 4 percent effective annual rate. How much can you withdraw each month from your account in real terms assuming a 25 year withdrawal period? What is the nominal dollar amount of your last withdrawal?

**Problem 2 (10 points)** The Alfred Bowles Company (ABC) is offering an 8-year bond for sale at a par value of \$1,000 and semi-annual interest payments. The bond is unusual in that the interest rate is based on the federal deficit, Super Bowl winners and Al Gore's personality index (which has to increase). After you examine the features of the bond, you feel that it will have an annual interest rate of 10% for the first four years and 12% for the last four years. Since these interest payments are too small to invest in more bonds, you will put your interest payments into a savings account. The savings account will pay a 5% effective annual rate the first three years and a 7% effective annual rate for the last five years. Assuming all these facts are correct, what is your effective annualized return on this investment? NOTE: This is a time value of money problem, not a typical bond problem.

**Problem 3 (10 points)** It is January 1, 2009 and you purchase a new car for \$35,000 on a 60-month loan with a 7.2 percent APR loan compounded monthly. The first payment is due on January 1, 2009. It is now July 1, 2010 and you take a new job with a substantial signing bonus and decide to pay off your car loan. If the bank charges you a 1 percent prepayment penalty (that is 1 percent of the outstanding balance paid off early) and all your payment were exactly on time, how much will your payment on July 1, 2010 be?

**Problem 4 (12 points)** An All-Pro defensive lineman is in contract negotiations. The team has offered the following salary structure:

<u>Time</u>	<u>Salary</u>
0	\$8,000,000
1	\$4,000,000
2	\$4,800,000
3	\$5,700,000
4	\$6,400,000
5	\$7,000,000
6	\$7,500,000

All salaries are to be paid in a lump sum. The player has asked you as his agent to renegotiate the terms. He wants an equal salary paid every three months, starting three months from now. He also wants a \$9 million dollar signing bonus, and he wants the contract value increased by \$750,000. Assuming the interest rate is 4.5 percent compounded daily, what is the amount of his quarterly check? Assume 365 days in a year.

**Problem 5 (9 points)** Babe Ruth was the highest paid baseball player in 1931 with a salary of \$80,000. In 2009, Alex Rodriguez had baseball's highest salary at \$33 million. Assume that the inflation index which stood at 15.9 in 1931 was 211.14 in 2009. What was the real growth rate in the highest baseball salary? What salary would Babe Ruth have been paid in 1931 assuming he received the same real salary as Alex Rodriguez?

**Problem 6 (8 points)** What is the ask yield of the bond listed below? Did interest rates move up or down on this day?

Rate	Maturity Mo./Yr.	Bid	Asked	Chg	Ask Yld.
7.375	Nov33	124:09	124:12	+6	

**Problem 7 (10 points)** Below you are given the financial statements for a company. Calculate the cash flow identity and explain each individual cash flow. Do the cash flows appear to be a good or bad sign for the company?

	<b>2008</b>
Sales	\$3,500,000
COGS	2,905,000
S&A Expense	400,000
Depreciation	<u>25,000</u>
EBIT	170,000
Interest	<u>81,000</u>
EBT	89,000
Taxes	<u>31,150</u>
Net Income	57,850

Dividends	7,850
Retained Earnings	50,000

	<b>Dec. 31, 2007</b>	<b>Dec 31, 2008</b>
Cash	\$ 60,000	\$ 50,000
Accts. Rec.	400,000	600,000
Inventory	<u>350,000</u>	<u>500,000</u>
Current Assets	\$810,000	\$1,150,000
Fixed Assets	<u>310,000</u>	<u>300,000</u>
Total Assets	\$1,120,000	\$1,450,000
Current Liabilities	\$320,000	\$450,000
Long-term debt	300,000	450,000
Equity	<u>500,000</u>	<u>550,000</u>
Total D&E	\$1,120,000	\$1,450,000





**Problem #4**

To get the APR for quarterly compounding:

Enter 4.5% **NOM** **EFF** 365 **C/Y**

Solve for 4.60249585%

Enter 4.60249585% **NOM** **EFF** 4 **C/Y**

Solve for 4.525127177%

The current value of his contract:

<b>CF<sub>0</sub></b>	\$8,000,000
<b>C01</b>	\$4,000,000
<b>F01</b>	1
<b>C02</b>	\$4,800,000
<b>F02</b>	1
<b>C03</b>	\$5,700,000
<b>F03</b>	1
<b>C04</b>	\$6,400,000
<b>F04</b>	1
<b>C05</b>	\$7,000,000
<b>F05</b>	1
<b>C06</b>	\$7,500,000
<b>F06</b>	1

NPV CPT: I = 4.60249585%  
\$37,852,037.91

Value of future payments = \$37,852,037.91 – 9,000,000 + 750,000 = \$29,602,037.91

Enter 24 4.525127%/4 \$26,602,037.91 **N** **I/Y** **PV** **PMT** **FV**

Solve for \$1,415,348.37

**Problem #5**

Inflation:

Enter 79 15.9 211.14± **N** **I/Y** **PV** **PMT** **FV**

Solve for 3.3278%

Nominal:

Enter 79 \$80,000 \$33,000,000± **N** **I/Y** **PV** **PMT** **FV**

Solve for 7.9212%

Real salary increase:

$$(1 + .079212) = (1 + r)(1 + .033278); r = 4.4454\%$$

Babe's salary in 1931:

Enter 79 4.4454% \$33,000,000 **N** **I/Y** **PV** **PMT** **FV**

Solve for \$1,062,339.62

**Problem #6**

Enter	48		±\$1,243.75	\$36.875	\$1,000
	<b>N</b>	<b>I/Y</b>	<b>PV</b>	<b>PMT</b>	<b>FV</b>
Solve for		2.76%			

$$2.76\% \times 2 = 5.53\%$$

Since the price increased, interest rates decreased.

**Problem #7**

Cash flow identity: CF from Assets = CF to creditors + CF to stockholders

CF from assets = OCF – net capital spending –  $\Delta$ NWC

$$\text{OCF} = \text{EBIT} + \text{depreciation} - \text{taxes} = \$170,000 + 25,000 - 31,150 = \$163,850$$

Net capital spending

Ending fixed assets	\$300,000
– Beg fixed assets	310,000
+ depreciation	<u>25,000</u>
	\$ 15,000

$\Delta$ NWC

Ending NWC	\$1,150,000 – 450,000 = \$700,000
– Beg. NWC	\$810,000 – 320,000 = <u>\$490,000</u>
	\$210,000

$$\text{CF from assets} = \$163,850 - 15,000 - 210,000 = -\$61,150$$

CF to creditors

Interest paid	\$81,000
– Net new borrowing	<u>150,000</u>
	–\$69,000

CF to stockholders

Dividends	\$ 7,850
– Net new equity	<u>0</u>
	\$ 7,850

Cash flow identity: CF from Assets = CF to creditors + CF to stockholders

$$-\$61,150 = -\$69,000 + 7,850$$

The company created a negative cash flow of \$61,150 from operations. They spent \$15,000 on fixed assets and \$210,000 on current accounts. They company received (borrowed) \$69,000 from creditors and paid \$7,850 to stockholders. The cash flows do not appear to be a good sign. The increase in accounts receivable and inventory may mean the company is managing these accounts less efficiently, which will increase the cost of these accounts and well as the opportunity costs.