

# Mid Term Exam Intermediate Financial Accounting II Winter 2009 ADM3340M

## (SUGGESTED SOLUTIONS)

Name: \_\_\_\_\_

ID#: \_\_\_\_\_

### Instructions:

1. Write your name and student ID number above.
2. Cell phones and all other communication devices are prohibited.
2. This examination "SUGGESTED SOLUTION" comprises **4** questions over **15** numbered pages. Answer all questions in this booklet. Booklet is **not** to be removed from the examination room. You may not separate the pages.
3. Limit your answer to the space provided. Blank sheets for rough work and supporting calculations are given at the end of each question.
4. This exam is out of 100 marks and is 2½ hours long. You should budget approximately 1.5 minutes per mark.
5. Please do **not** ask the invigilator or the professor any questions, as they will **not** be answered. State reasonable assumptions, if you feel they are necessary.
6. Present value tables are provided on page 15.
7. Language (non-electronic) dictionaries are allowed.
8. You ***must*** sign the Statement of Academic integrity on page 2 of this exam.

Question		Marks
1	Multiple Choice	/20
2	Investments	/27
3	Liabilities	/27
4	Shareholders Equity	/26
TOTAL		/100

**You must sign the following**

**Statement of Academic Integrity**

The Telfer School of Management does not condone academic fraud, an act by a student that may result in a false academic evaluation of that student or of another student. Without limiting the generality of this definition, academic fraud occurs when a student commits any of the following offences: plagiarism or cheating of any kind, use of books, notes, mathematical tables, dictionaries or other study aid unless an explicit written note to the contrary appears on the exam, to have in his/her possession cameras, radios (radios with head sets), tape recorders, pagers, cell phones, or any other communication device which has not been previously authorized in writing.

**Statement to be signed by the student:**

I have read the text on academic integrity and I pledge not to have committed or attempted to commit academic fraud in this examination.

Signed:\_\_\_\_\_

**Note: an examination without this signed statement will not be graded and will receive an exam grade of zero.**

**QUESTION 1 (20 marks)**  
**Multiple choice questions: enter your answer in the table below.**

1	d
2	b
3	c
4	d
5	d
6	c
7	c
8*	c
9	a
10	c
11	c
12	d
13	b
14	b
15	c
16	c
17	a
18	d
19	a
20	a

\*Q8 (option a): Long-term liabilities that will mature in the next 12 months should not be included as current liabilities if they will be paid using assets that the company has accumulated for this specific purpose and has not reported as current assets. When current assets are not used or no other current liabilities are created in order to repay the maturing liability, it is incorrect to classify the liability as current.

**Multiple choice questions: enter your answer in the table above.**

1. Held-to-maturity investments are accounted for at
  - a. fair value.
  - b. lower of cost and fair value.
  - c. net present value.
  - d. **amortized cost.**
2. Available-for-sale investments are reported at
  - a. cost.
  - b. **fair value.**
  - c. lower of cost and fair value.
  - d. amortized cost.
3. Comprehensive income is included as part of
  - a. retained earnings.
  - b. net income.
  - c. **shareholders' equity.**
  - d. unearned revenue.
4. The equity method of accounting for equity securities is used for
  - a. available-for-sale equity investments.
  - b. trading securities.
  - c. investments without significant influence.
  - d. **investments with significant influence.**
5. Dane, Inc., owns 35% of Marin Corporation. During the calendar year 2006, Marin had net earnings of \$300,000 and paid dividends of \$30,000. Dane mistakenly recorded these transactions using the cost method rather than the equity method of accounting. What effect would this have on the investment account, net income, and retained earnings, respectively?
  - a. Understate, overstate, overstate
  - b. Overstate, understate, understate
  - c. Overstate, overstate, overstate
  - d. **Understate, understate, understate**
6. Long-term investments in equity securities should be written down if
  - a. it is probable that the investor will not be able to collect all amounts due.
  - b. there is a permanent decline in value.
  - c. **there is an other than temporary decline in value.**
  - d. the market value is less than the carrying value.
7. Companies using differential reporting may account for equity investments under significant influence by which alternative method to the one normally required?
  - a. Consolidation
  - b. Fair value
  - c. **Cost**
  - d. Any of these
8. Which of the following items is a current liability?
  - a. Bonds (for which there is an adequate sinking fund properly classified as a long-term investment) due in three months.
  - b. Bonds due in three years.
  - c. **Bonds (for which there is an adequate appropriation of retained earnings) due in eleven months.**
  - d. Bonds to be refunded when due in eight months, there being no doubt about the marketability of the refunding issue.
9. Mark Ward is a farmer who owns land that borders on the right-of-way of the Northern Railroad. On August 10, 2008, due to the admitted negligence of the Railroad, hay on the farm was set on fire and burned. Ward had had a dispute with the Railroad for several years concerning the ownership of a small parcel of land. The representative of the Railroad has offered to assign any rights that the Railroad may have in the land to Ward in exchange for a release of his right to reimbursement for the loss he has sustained from

- the fire. Ward appears inclined to accept the Railroad's offer. The Railroad's 2008 financial statements should include the following related to the incident:
- recognition of a loss and creation of a liability for the value of the land.
  - recognition of a loss only.
  - creation of a liability only.
  - disclosure in note form only.
- Gomez Corporation, a manufacturer of household paints, is preparing annual financial statements at December 31, 2008. Because of a recently proven health hazard in one of its paints, the government has clearly indicated its intention of having Gomez recall all cans of this paint sold in the last six months. The management of Gomez estimates that this recall would cost \$800,000. What accounting recognition, if any, should be accorded this situation?
    - No recognition
    - Note disclosure only
    - Operating expense of \$800,000 and liability of \$800,000
    - Appropriation of retained earnings of \$800,000
  - When a company sets aside money in a trust such that the investment and any return will be sufficient to pay the principal and the interest to the creditor, but the creditor does not release the company from the primary obligation to settle the debt, this type of arrangement is known as
    - substantive repayment.
    - in-substance refunding.
    - in-substance defeasance.
    - legal defeasance.
  - Which of the following must be disclosed relative to long-term debt maturities and sinking fund requirements?
    - The present value of future payments for sinking fund requirements and long-term debt maturities during each of the next five years.
    - The present value of scheduled interest payments on long-term debt during each of the next five years.
    - The amount of scheduled interest payments on long-term debt during each of the next five years.
    - The amount of future payments for sinking fund requirements and long-term debt maturities during each of the next five years.
  - The pre-emptive right of a common shareholder is the right to
    - share proportionately in corporate assets upon liquidation.
    - share proportionately in any new issues of shares of the same class.
    - receive cash dividends before they are distributed to preferred shareholders.
    - exclude preferred shareholders from voting rights.
  - How should a "gain" from the sale of treasury shares be reflected in the financial statements?
    - As ordinary earnings shown on the income statement
    - As contributed surplus from treasury shares transactions
    - As an increase in the amount shown for common shares
    - As an extraordinary item shown on the income statement
  - According to the CBCA, when a company purchases its own shares on the market
    - they are recorded with a debit to Treasury Shares.
    - the amount is deducted from the share class to which they belong.
    - they must be cancelled.
    - the excess of purchase price over cost is a loss.
  - At the date of the financial statements, common shares issued would exceed common shares outstanding as a result of the
    - declaration of a stock split.
    - declaration of a stock dividend.
    - purchase of treasury shares.
    - payment in full of subscribed shares.

17. Farmer Corporation owns 4,000,000 shares of shares in Baha Corporation. On December 31, 2008, Farmer distributed these shares as a dividend to its shareholders. This is an example of a
- property dividend.
  - stock dividend.
  - scrip dividend.
  - cash dividend.
18. Declaration and issuance of a stock dividend
- increases the current ratio.
  - decreases the amount of working capital.
  - decreases total shareholders' equity.
  - has no effect on total assets, liabilities, or shareholders' equity.
19. What effect does the issuance of a 2-for-1 stock split have on each of the following balance sheet accounts?
- |    | <u>Common Shares</u> | <u>Retained Earnings</u> |
|----|----------------------|--------------------------|
| a. | No effect            | No effect                |
| b. | Increase             | No effect                |
| c. | Decrease             | No effect                |
| d. | Decrease             | Decrease                 |
20. A company wishes to raise funds by issuing either bonds or cumulative preferred shares. How will the annual interest or dividend affect total liabilities each year?
- Interest is a current liability each year (until paid).
  - Undeclared cumulative preferred dividends are a current liability each year (until paid).
  - Both interest and undeclared cumulative preferred dividends are current liabilities each year (until paid).
  - Interest and cumulative preferred dividends in arrears are current liabilities each year (until paid).

QUESTION 2 (27 marks)

Answer both parts. Each part is independent.

PART 1: (17 marks)

On January 1, 2009, Jovi Inc. purchased \$200,000-face-value 8% bonds of Mercury Ltd. For \$184,557. The bonds were purchased to yield 10% interest. Interest is payable semi-annually on July 1 and January 1 and the bonds mature on January 1, 2014. On March 31, 2010, to meet its liquidity needs, Jovi sold the bonds for \$194,769 plus accrued interest.

Required

- a. Prepare the journal entry to record the bond purchase on January 1, 2009. Assume that the bonds are classified as available for sale.
- b. Prepare the amortization schedule, using the effective interest method, for the bonds from the date of purchase to July 1, 2010.
- c. Prepare the journal entries to record the semi-annual investment interest income on July 1, 2009 and December 31, 2009.
- d. The fair value of the Mercury bonds on December 31, 2009 is \$190,449. Prepare the necessary adjusting entry needed to bring the investment to fair value at December 31, 2009.
- e. Prepare the journal entry(ies) to record the events associated with the sale of the bonds on March 31, 2010.

(a) January 1, 2009 purchase entry:

Investment in Mercury Ltd. Bonds (AFS) .....	184,557	
Cash .....		184,557

(b) The amortization schedule is as follows:

Partial Schedule of Interest Income and Bond Discount  
Amortization—Effective Interest Method  
8% Bonds Purchased to Yield 10%

Date	Cash Received	Investment Interest Income	Bond Discount Amortization	Amortized Cost of Bonds
01/01/09				\$184,557
07/01/09	\$ 8,000	\$ 9,228	\$ 1,228	185,785
01/01/10	8,000	9,289	1,289	187,074
07/01/10	8,000	9,354	1,354	188,428
01/01/11	8,000	9,421	1,421	189,849
07/01/11	8,000	9,492	1,492	191,341
01/01/12	8,000	9,567	1,567	192,908
07/01/12	8,000	9,645	1,645	194,553
01/01/13	8,000	9,728	1,728	196,281
07/01/13	8,000	9,814	1,814	198,095
01/01/14	8,000	9,905	1,905	200,000
Total	\$80,000	\$95,443	\$15,443	

Not required.

(c) Interest entries:

July 1, 2009		
Cash .....	8,000	
Investment in Mercury Ltd. Bonds (AFS) .....	1,228	
Interest Income.....		9,228

December 31, 2009		
Interest Receivable .....	8,000	
Investment in Mercury Ltd. Bonds (AFS) .....	1,289	
Interest Income.....		9,289
(d) Amortized cost of bond – 31/12/09	\$187,074	
Fair value – 31/12/09	<u>190,449</u>	
Unrealized holding gain	<u>\$3,375</u>	
Investment in Mercury Ltd. Bonds (AFS) .....	3,375	
Holding Gain on Investment in Mercury Ltd. Bonds (OCI) .....		3,375
(e) Cash received for interest = \$8,000 X 3/6 = \$4,000		
Interest Income = \$187,074 X 10% X 3/12 = \$4,677 (or \$4,677 = \$9,354 from the amortization table x 3/6)		
Carrying value of bond on Dec. 31, 2010	\$190,449	
Amortization of discount (\$4,677 - \$4,000)	<u>677*</u>	
Carrying value of bond on March 30, 2009	\$191,126	
*(Alternatively: amortization of discount \$1,354 X 3/6)		
March 30, 2010 sale entry:		
Selling price of bonds	\$194,769	
Less: Carrying value of bond	<u>(191,126)</u>	
Unrealized holding gain	<u>\$ 3,643</u>	
March 30, 2010		
Cash .....	4,000	
Investment in Mercury Ltd. Bonds (AFS) .....	677	
Interest Income.....		4,677
Cash .....	194,769	
Holding Gain on Mercury Bonds (OCI) .....	3,375	
Investment in Mercury Ltd. Bonds (AFS) (190,449 + 677)		191,126
Gain (realized) on sale of Investments [194,769 – (187,074 – 677)]		7,018
OR		
Investment in Mercury Ltd. Bonds (AFS) .....	3,643	
Holding Gain on Mercury Bonds (OCI).....		3,643
Cash .....	194,769	
Investment in Mercury Ltd. Bonds (AFS) .....		194,769
Holding Gain on Mercury Bonds (OCI) .....	7,018	
..... Gain (realized) on sale of Investments		7,018
Selling price of bonds	\$194,769	
Amortized cost of bond (\$187,074 + 677)	<u>(187,751)</u>	
Realized gain on sale of bonds	<u>\$7,018</u>	



**PART 2: (10 marks)**

Steffi Inc. commenced business in 2008 and its accounting year-end is December 31. At December 31, 2008, the available-for-sale equity portfolio of Steffi Inc. was as follows:

Security	Cost and Carrying Amount	Fair value	Unrealized Gain (Loss)
A	\$17,500	\$15,000	\$(2,500)
B	12,500	14,000	1,500
C	23,000	25,500	2,500
Total	\$53,000	\$54,500	\$1,500

On January 20, 2009, Steffi Inc. sold security A for \$15,100.

**Required**

- a. Prepare any entry(ies) required at December 31, 2008.
- b. Prepare the journal entries for the 2009 sale of security A.

(a) December 31, 2008

Investment in B. ....	1,500	
Investment in C. ....	2,500	
Holding Loss on A (OCI) .....	2,500	
Holding Gain on B (OCI) .....		1,500
Holding Gain on C (OCI) .....		2,500
Investment in A.....		2,500

(b) Calculation of realized gain or loss on sale of security:

Proceeds from sale of security A	\$15,100
Cost of security A	<u>17,500</u>
Loss on sale of security	<u><u>(\$ 2,400)</u></u>

January 20, 2009

Cash .....	15,100	
Loss on Sale of A.....	2,400	
Holding Loss on A (OCI) .....		2,500
Investment in A.....		15,000

OR

Investment in A .....	100	
Holding Gain on A (OCI) .....		100
Cash .....	15,100	
Investment in A.....		15,100
Loss on Sale of A.....	2,400	
Holding Loss on A (OCI) .....		2,400

QUESTION 3 (27 marks)

Answer all three (3) parts. Each part is independent.

PART 1: (9 marks)

On November 1, 2008 Whale Inc. issues \$2,000,000 face value bonds. The bond date is July 1, 2008 and the bonds carry a coupon rate of 8% per year, payable semi-annually on July 1 and January 1. The bonds' maturity date is June 30, 2017. The bonds provide an annual yield of 10%.

Required

Present the entry to record the issuance of the bonds.

Intro	INPUT	Text	Date	Tables	Issuance	Calc	Issuance	I1	I2	I3	I4	I5	Retirement
	B		C				D		E				
2	November 01, 2008		Date of issuance				Dr		Cr				
3													
4	Bond discount						228,247.20						
5	Cash						1,825,086.13						
6			Interest payable						53,333.33				
7			Bonds payable						2,000,000.00				
8													
9													
10									To record the issuance of 9.00-year bonds, face value \$2,000,000, stated interest rate 8.0000% per annum. The bond date is July 01, 2008 with interest paid semi-annually. There are 104 months (including 18 interest payments) between the bond's issuance and maturity dates. For details of how this journal entry's amounts are determined, please refer to the ISSUANCE_CALC sheet.				

	If the bonds were issued on:	
	July 1, 2008	January 1, 2009
	There would be 18 semi-annual interest payments (108 months) between July 1, 2008 and the maturity date, June 30, 2017	There would be 17 semi-annual interest payments (102 months) between January 1, 2009 and the maturity date, June 30, 2017
Present value of the bond's 18.00 semi-annual interest payments of \$80,000 (= \$2,000,000 x 8.0000%/2) at 5.0000% effective interest rate [\$935,167 = 11.68959 x \$80,000]	935,167.20	
Present value of the maturity value of \$2,000,000 at the end of 18.00 periods at 5.0000% effective interest rate [\$831,040 = 0.41552 x \$2,000,000]	831,040.00	
Present value of the bond's 17.00 semi-annual interest payments of \$80,000 (= \$2,000,000 x 8.0000%/2) at 5.0000% effective interest rate [\$901,926 = 11.27407 x \$80,000]		901,925.60
Present value of the maturity value of \$2,000,000 at the end of 17.00 periods at 5.0000% effective interest rate [\$872,600 = 0.4363 x \$2,000,000]		872,600.00
Total	1,766,207.20	1,774,525.60
Bond proceeds, excluding any accrued interest and issuance cost, on November 01, 2008 (which lies between July 01, 2008 and January 01, 2009). \$1,771,753 = \$1,766,207 + {[((\$1,774,526 - \$1,766,207)/6months) x 4months]}	1,771,752.80	

PART 2: (8 marks)

On November 1, 2007 Beaver Inc. issues \$1,500,000 face value bonds. The bond date is February 1, 2007 and the bonds carry a coupon rate of 12% per year, payable semi-annually on January 31 and July 31. The bonds' maturity date is January 31, 2017. Proceeds upon issuance, excluding accrued interest, were \$1,678,308, and the bonds provide an annual yield of 10%.

Beaver Inc. uses the effective interest rate method to amortize any bond premium or discount. Beaver Inc.'s accounting year-end is August 31.

Required

Present the journal entry necessary for these bonds on 31 January 2009.

Intro	INPUT	Text	Date Tables	Issuance Calc	Issuance	I1	I2	I3	I4	I5	Retirement	R1	R2	R3	R4	R5	Maturity	Amort Table
	B			C					D		E						F	
		January 31, 2009		The third interest payment date after the issuance date														
2									Dr		Cr							
3		Interest expense							69,546.29									
4		Bond premium							5,453.71									
5																		
6		Interest payable									75,000.00							
7																		
8																		
9																		
10		Interest payable							90,000.00									
11		Cash									90,000.00							
12																		

Instructions:  
Enter your data in the INPUT screen; all other screens are "Output screens".

= \$1,669,111 (see amortization table's semi-annual period 3) x 5.0000% (semi-annual yield) x 5/6 months

= \$75,000 - \$69,546

= \$1,500,000 x 5/12 months x 12.0000%

= \$75,000 interest accrued (as appears in the journal entry above)  
+ \$15,000 [ \$15,000 = \$1,500,000 x 1/12 months x 12.0000% interest accrued at August 31, 2008, the first accounting year-end after the issuance date ]

To record bond interest expense incurred between August 31, 2008 (the first accounting year-end after the issuance date ) and January 31, 2009. Effective interest rate method.

To record the bond interest payment.

PART 3: (10 marks)

On November 1, 2008 Polar Bear Inc. issues \$1,000,000 face value bonds. The bond date is March 30, 2008 and the bonds carry a coupon rate of 4% per year, payable semi-annually on March 31 and September 30. The bonds' maturity date is March 30, 2023. Proceeds upon issuance, excluding accrued interest, were \$546,985, and the bonds provide an annual yield of 10%.

Polar Bear Inc. uses the straight-line method to amortize any bond premium or discount. On October 30, 2018 Polar Bear Inc. retires 40% of the bonds at 101%, excluding accrued interest. Polar Bear Inc.'s accounting year-end is December 31.

Required

Present all journal entries necessary for these bonds on the date of retirement, 30 October 2018.

Intro	INPUT	Text	Date Tables	Issuance Calc	Issuance	I1	I2	I3	I4	I5	Retirement	R1	R2	R3	R4	R5	Maturity	Amort
	B			C		D		E				F						
	There are 173 months between the bond's issuance and maturity dates, and 53 months between the retirement and maturity dates.																	
2		Date of retirement																
3		October 30, 2018			Dr		Cr											
4		Interest expense			2,380.77													
5		Bond discount					1,047.43											
6		Interest payable					1,333.33											
7																		
8		To record interest expense incurred on 40.0000% of the bonds between September 30, 2018 (the closest preceding interest payment date to the retirement date) and October 30, 2018. Straight-line method. [Note: October 30, 2018 is neither an accounting year-end or a bond interest payment anniversary date.]																
12		Loss on retirement			59,513.98													
13		Interest payable			1,333.33													
14		Bond payable			400,000.00													
15		Bond discount					55,513.98											
16																		
17		Cash					405,333.33											
18																		
19		To record the retirement at 101.0000% of 15.00 year 4.0000% bonds, issued November 01, 2008, face value \$400,000.																

QUESTION 4 (26 marks)

Answer all three (3) parts. Each part is independent.

PART 1: (8 marks)

KD Inc. accepted subscriptions for 20,000 no par value common shares on April 28, 2008 when the shares were selling for \$45. A 40% down payment was received with the remainder due in six months. On October 28, the balance of the subscription price is received and the shares are issued.

Required

- (a) Prepare the journal entry(ies) for KD Inc. for April 28, 2008.
- (b) Prepare the journal entry(ies) for KD Inc. for October 28, 2008.

(a)	Subscriptions Receivable .....	900,000	
	Common Shares Subscribed .....		900,000
	Cash .....	360,000	
	Subscriptions Receivable .....		360,000
(b)	Cash .....	540,000	
	Subscriptions Receivable .....		540,000
	Common Shares Subscribed.....	900,000	
	Common Shares.....		900,000

PART 2: (9 marks)

Hamer Corporation's balance sheet reported the following:

Common shares, no par, outstanding 5,000 shares	\$230,000
Retained earnings	100,000

The following transactions occurred this year:

- (a) Purchased 40 common shares to be held as treasury shares, paying \$60 per share.
- (b) Sold 30 of the treasury shares at \$65 per share.
- (c) Retired the remaining treasury shares.

Required

Prepare the journal entries for these transactions.

(a)	Treasury Shares .....	2,400	
	Cash .....		2,400
(b)	Cash .....	1,950	
	Treasury Shares.....		1,800
	Contributed Surplus from Treasury Shares.....		150
(c)	Common Shares .....	460	
	Contributed Surplus from Treasury Shares.....	140	
	Treasury Shares.....		600

PART 3: (9 marks)

Cum-Chan Corporation has the following shares outstanding:

- Preferred shares, no par \$0.60, cumulative and partially participating up to an additional \$.20 per share. There are 5,000 preferred shares outstanding. No dividends were declared during the prior two years.
- Common Shares, no par, 10,000 shares outstanding. After the preferred shares receive their base dividend and any dividends in arrears, the common shares receive a matching dividend of \$1.50 per share before any participation by the preferred shares.

The board of directors has declared cash dividends of \$33,000.

**Required**

Complete a journal entry and show computations, to record the dividend declaration. Clearly show the dividend allocation to both the common and preferred shares.

Retained earnings (dividends) .....	33,000	
Dividends payable, preferred .....		10,000
Dividends payable, common .....		23,000

Computations:

	<i>Preferred</i>	<i>Common</i>
Preferred in arrears (5,000 × \$.60 × 2 yrs) .....	\$6,000	
Preferred current (5,000 × \$.60) .....	3,000	
Common to match (10,000 × \$1.50) .....		\$15,000

Remaining dividend: \$9,000 (\$33,000 – \$6,000 – \$3,000 – \$15,000)

Participation allocation:

Preferred:  
 $\frac{5,000 \times \$ .60 = \$3,000}{\$3,000 + \$15,000 = \$18,000} \times \$9,000 = \$1,500$ ; max, \$1,000\*    1,000

Balance to common (\$33,000 – \$25,000) .....	<u>8,000</u>
Total .....	<u>\$10,000</u> <u>\$23,000</u>

\*Cannot exceed 5,000 × \$.20 = \$1,000

Financial Tables

Present Value Tables

Table 2: PRESENT VALUE of \$1.00 that is received in the future.																		
Period/ Percent	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%
1	0.9900990	0.9803922	0.9708738	0.9615385	0.9523810	0.9433962	0.9345794	0.9259259	0.9174312	0.9090909	0.9009009	0.8928371	0.8849358	0.8771930	0.8695652	0.8620690	0.8547009	0.8474576
2	0.9802960	0.9611688	0.9425959	0.9245562	0.9070295	0.8899964	0.8734387	0.8573388	0.8416900	0.8264463	0.8116224	0.7971939	0.7831467	0.7694675	0.7561437	0.7431629	0.7305136	0.7181844
3	0.9705901	0.9425223	0.9151417	0.8889964	0.8638576	0.8396193	0.8162979	0.7938532	0.7721835	0.7513148	0.7311914	0.7117802	0.6930802	0.6749715	0.6575162	0.6406577	0.6243706	0.6086309
4	0.9609803	0.9238434	0.8884870	0.8548042	0.8227025	0.7920937	0.7628932	0.7350299	0.7084252	0.6830135	0.6587310	0.6355181	0.6133187	0.5920803	0.5717532	0.5522911	0.5336500	0.5157889
5	0.9514637	0.9000000	0.8626098	0.8219271	0.7835262	0.7472582	0.7129862	0.6805832	0.6499314	0.6209213	0.5934513	0.5674269	0.5427599	0.5193687	0.4971767	0.4761130	0.4561112	0.4371092
6	0.9420432	0.87979714	0.8374843	0.7903145	0.7462154	0.7049605	0.6663422	0.6301696	0.5962673	0.5644739	0.5346408	0.5066311	0.4803185	0.4553865	0.4323276	0.4104423	0.3895396	0.3704315
7	0.9327181	0.8705602	0.8130915	0.7599178	0.7106813	0.6650871	0.6227497	0.5834904	0.5470342	0.5131351	0.4816384	0.4523492	0.4250606	0.3996373	0.3759370	0.3538295	0.3331954	0.3139250
8	0.9234832	0.8534904	0.7894092	0.7306902	0.6768594	0.6274124	0.5820091	0.5402689	0.5018663	0.4663074	0.4339263	0.4038832	0.3761599	0.3503591	0.3269018	0.3050255	0.2847824	0.2660382
9	0.9143398	0.8367353	0.7664167	0.7025567	0.6446089	0.5918985	0.5439337	0.5002490	0.4604278	0.4240976	0.3909248	0.3606100	0.3328848	0.3075079	0.2842624	0.2629350	0.2434037	0.2254561
10	0.9052870	0.8203483	0.7440939	0.6735642	0.6139133	0.5583948	0.5083493	0.4631935	0.4224108	0.3853433	0.3521845	0.3219732	0.2943883	0.2697438	0.2471847	0.2266836	0.2080374	0.1910643
11	0.8963237	0.8042630	0.7224213	0.6495809	0.5846793	0.5267875	0.4750928	0.4288829	0.3875329	0.3504939	0.3172833	0.2874761	0.2606977	0.2366174	0.2149432	0.1954169	0.1778097	0.1619190
12	0.8874492	0.7884932	0.7013799	0.6245970	0.5568374	0.4969694	0.4440120	0.3971138	0.3553347	0.3186308	0.2858408	0.2566751	0.2307039	0.2075591	0.1869072	0.1684628	0.1519741	0.1372718
13	0.8786626	0.7730325	0.6809313	0.6005741	0.5303214	0.4688390	0.4149644	0.3676979	0.3261786	0.2896644	0.2575143	0.2291742	0.2041645	0.1820694	0.1625280	0.1452266	0.1299924	0.1162877
14	0.8699630	0.7578751	0.6611178	0.5774751	0.5050680	0.4425810	0.3878172	0.3404610	0.2992463	0.2633313	0.2319948	0.2046198	0.1806766	0.1597100	0.1413287	0.1251933	0.1110192	0.0985489
15	0.8613493	0.7430147	0.6418619	0.5552645	0.4810171	0.4172651	0.3624460	0.3152417	0.2743580	0.2393920	0.2090043	0.1826963	0.1598908	0.1400963	0.1228945	0.1079270	0.0948882	0.0835160
16	0.8528213	0.7284458	0.6231669	0.5339082	0.4581115	0.3936463	0.3387346	0.2918905	0.2518698	0.2176291	0.1882922	0.1631217	0.1414962	0.1228917	0.1065648	0.0930405	0.0811010	0.0707763
17	0.8443773	0.7141626	0.6050164	0.5133732	0.4362967	0.3713644	0.3163744	0.2702690	0.2310732	0.1978447	0.1696326	0.1456443	0.1252179	0.1077997	0.0929259	0.0802074	0.0693171	0.0599799
18	0.8360173	0.7001594	0.5873946	0.4936281	0.4155207	0.3503438	0.2958639	0.2502490	0.2119937	0.1798588	0.1528222	0.1300396	0.1108123	0.0943611	0.0808051	0.0691443	0.0592434	0.0508304
19	0.8277399	0.6864308	0.5702860	0.4746424	0.3957340	0.3305130	0.2763083	0.2317121	0.1944897	0.1633080	0.1376776	0.1161068	0.0980640	0.0829484	0.0702633	0.0596071	0.0506371	0.0430766
20	0.8195443	0.6729713	0.5536758	0.4563569	0.3768895	0.3118047	0.2584190	0.2145482	0.1784303	0.1486436	0.1240339	0.1036668	0.0867823	0.0727617	0.0611003	0.0513535	0.0432796	0.0363036
21	0.8114302	0.6597578	0.5375493	0.4388336	0.3589424	0.2941354	0.2413131	0.1986357	0.1636991	0.1351306	0.1117423	0.0923596	0.0767985	0.0638261	0.0531507	0.0442978	0.0369911	0.0309370
22	0.8033962	0.6468390	0.5218925	0.4219354	0.3418499	0.2775051	0.2257132	0.1839405	0.1501817	0.1228460	0.1006687	0.0826425	0.0679633	0.0559878	0.0462006	0.0381878	0.0316163	0.0262178
23	0.7954418	0.6341539	0.5066917	0.4037263	0.3235713	0.2617973	0.2109469	0.1703133	0.1377814	0.1116782	0.0906925	0.0737880	0.0601445	0.0491121	0.0401744	0.0329205	0.0272025	0.0222185
24	0.7875661	0.6217215	0.4919337	0.3901215	0.3100679	0.2469785	0.1971466	0.1576993	0.1264049	0.1015236	0.0817050	0.0658821	0.0532252	0.0430808	0.0349343	0.0283797	0.0230961	0.0188292
25	0.7797684	0.6095309	0.4776036	0.3751168	0.2953028	0.2329986	0.1842492	0.1460179	0.1159678	0.0922960	0.0736081	0.0588233	0.0471020	0.0377902	0.0303776	0.0244633	0.0197403	0.0159369
26	0.7720480	0.5973793	0.4636947	0.3606892	0.2812407	0.2198100	0.1721935	0.1352018	0.1063925	0.0839855	0.0663136	0.0525208	0.0416831	0.0331493	0.0264153	0.0210908	0.0168720	0.0135228
27	0.7644039	0.5885620	0.4501891	0.3468166	0.2678483	0.2073680	0.1609304	0.1251868	0.0976078	0.0762777	0.0597420	0.0468936	0.0368877	0.0290783	0.0229699	0.0181817	0.0144205	0.0114600
28	0.7568356	0.5743746	0.4370763	0.3334775	0.2550936	0.1956301	0.1504022	0.1159137	0.0895484	0.0693433	0.0538216	0.0416693	0.0326440	0.0255073	0.0199738	0.0156739	0.0123253	0.0097114
29	0.7493421	0.5631123	0.4243464	0.3206514	0.2429463	0.1845367	0.1405628	0.1073275	0.0821345	0.0630394	0.0484879	0.0373833	0.0288885	0.0223748	0.0173683	0.0135120	0.0103344	0.0082304
30	0.7419229	0.5532079	0.4119863	0.3083187	0.2313774	0.1741101	0.1313671	0.0993773	0.0733711	0.0573086	0.0436828	0.0333779	0.0255631	0.0196270	0.0151031	0.0116482	0.0090038	0.0069749

Table 4: PRESENT VALUE of Annuity of \$1.00 in arrears.																		
Period/ Percent	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%
1	0.990089	0.980392	0.970874	0.961538	0.952381	0.943396	0.934579	0.925926	0.917431	0.909091	0.900901	0.892837	0.884936	0.877193	0.869565	0.862069	0.854701	0.847458
2	1.970395	1.941361	1.913470	1.886095	1.859410	1.833393	1.808018	1.783265	1.759111	1.735337	1.712523	1.690051	1.668102	1.646661	1.625709	1.605232	1.585214	1.565642
3	2.940985	2.883883	2.828611	2.775091	2.723248	2.673012	2.624316	2.577097	2.531295	2.486852	2.443715	2.401831	2.361153	2.321632	2.283223	2.245990	2.209585	2.174273
4	3.901966	3.807729	3.717098	3.629893	3.545931	3.465106	3.387211	3.312127	3.239720	3.169663	3.102446	3.037349	2.974471	2.913712	2.854978	2.798181	2.743235	2.690062
5	4.853431	4.7307729	4.609707	4.491822	4.376977	4.265364	4.150197	4.039270	3.929651	3.790787	3.695987	3.604776	3.517231	3.433081	3.352153	3.274294	3.199346	3.127171
6	5.795476	5.6493700	5.471791	5.242137	5.073692	4.917324	4.766340	4.622880	4.485919	4.353261	4.230538	4.114107	3.997350	3.889668	3.784483	3.684736	3.589185	3.497603
7	6.728195	6.566260	6.230283	6.002035	5.786373	5.582351	5.389289	5.206370	5.032933	4.869419	4.712196	4.563737	4.422610	4.288305	4.160420	4.038363	3.922380	3.811328
8	7.651678	7.419731	7.016992	6.732743	6.463213	6.209794	5.971299	5.746639	5.534819	5.334926	5.146123	4.967640	4.798770	4.638864	4.487322	4.343391	4.207163	4.077566
9	8.566018	7.725606	7.786109	7.433332	7.107822	6.801692	6.515232	6.246888	5.993247	5.759024	5.537048	5.328250	5.131635	4.946372	4.771584	4.606344	4.450366	4.303022
10	9.471305	78.076834	8.530203	8.110896	7.721733	7.360087	7.023382	6.710081	6.417658	6.144567	5.892322	5.650223	5.426243	5.216116	5.019769	4.833227	4.658604	4.494086
11	10.367628	78.981117	9.252624	8.760477	8.306414	7.886873	7.498674	7.138964	6.805191	6.498061	6.206513	5.937699	5.686941	5.452733	5.233712	5.028644	4.836413	4.656005
12	11.253077	79.669610	9.954004	9.385074	8.863252	8.383844	7.942686	7.536078	7.160725	6.813692	6.492356	6.194374	5.917647	5.660292	5.420619	5.197107	4.988387	4.793225
13	12.133740	80.442643	10.634935	9.985648	9.393373	8.852683	8.357631	7.903776	7.486904	7.103336	6.749870	6.423348	6.121812	5.842362	5.583147	5.342334	5.119280	4.909513
14	13.083703	81.200518	11.296073	10.563123	9.898641	9.294984	8.745468	8.244237	7.786150	7.366687	6.981863	6.628168	6.302488	6.002072	5.724476	5.467529	5.229299	5.008062
15	13.963033	81.943333	11.937933	11.118387	10.379638	9.712249	9.107914	8.539479	8.006088	7.606080	7.190870	6.810864	6.462379	6.142168	5.847370	5.573456	5.324187	5.091378
16	14.717874	82.671979	12.561102	11.632296	10.837770	10.105895	9.446649	8.831369	8.312358	7.823709	7.379162	6.973986	6.603875	6.265060	5.954235	5.668497	5.405288	5.162354
17	15.562251	83.386141	13.166118	12.165669	11.274066	10.477260	9.763223	9.121638	8.543631	8.021553	7.548794	7.119630	6.729093	6.372839	6.047161	5.748704	5.474605	5.222334
18	16.398269	84.086300	13.753313	12.659297	11.689587	10.827603	10.059087	9.371889	8.755625	8.201412	7.701617	7.249670	6.839960	6.467420	6.127966	5.817848	5.533851	5.273164
19	17.226008	84.772331	14.323799	13.133939	12.085321	11.158116	10.335595	9.603599	8.950115	8.364920	7.839294	7.363777	6.937969	6.550369	6.198231	5.877435	5.584488	5.316241
20	18.045333	85.443703	14.877475	13.590326	12.462210	11.466921	10.594014	9.818147	9.128346	8.513364	7.963328	7.469444	7.024752	6.623131	6.259331	5.928841	5.627767	5.352746
21	18.853693	86.105478	15.415024	14.029160	12.821133	11.764077	10.833327	10.016803	9.292244	8.648694	8.075070	7.562003	7.101350	6.686937	6.312462	5.973139	5.664758	5.353683
22	19.660379	86.752317	15.936917	14.451115	13.163003	12.041382	11.061240	10.200744	9.442423	8.771540	8.173739	7.644646	7.169153	6.742944	6.338663	6.011326	5.696375	5.409901
23	20.455921	87.386473	16.443608	14.856942	13.488574	12.303379	11.272187	10.371059	9.580207	8.883218	8.266432	7.719434	7.229638	6.792036	6.398837	6.044247	5.723397	5.432120
24	21.243387	88.008195	16.933542	15.246963	13.795642	12.550358	11.469334	10.528738	9.706612	8.984744	8.348137	7.784316	7.282883	6.835137	6.433771	6.072627	5.746493	5.450949
25	22.023136	88.617726	17.413148	15.622080	14.093943	12.783336	11.653383	10.674776	9.822380	9.077040	8.421743	7.843139	7.329985	6.872927	6.464419	6.097092	5.766234	5.466906
26	22.793204	89.213503	17.876842	15.982769	14.375185	13.003166	11.823719	10.809978	9.928972	9.160943	8.488038	7.895660	7.371668	6.906077	6.490364	6.118183	5.783106	5.480429
27	23.559608	89.801167	18.327031	16.329356	14.643034	13.210334	11.966709	10.935165	10.026580	9.237223	8.547800	7.942534	7.408536	6.935153	6.513354	6.136364	5.797326	5.491889
28	24.316443	90.373542	18.764108	16.663063	14.989127	13.406164	12.317111	11.051078	10.116128	9.306367	8.601622	7.984423	7.441200	6.960662	6.533508	6.152035	5.809851	5.501601
29	25.063783	90.938634	19.188435	16.983715	15.147074	13.590721	12.277674	11.158406	10.198283	9.369606	8.680110	8.021806	7.470088	6.983037	6.580877	6.163530	5.820386	5.509331
30	25.807708	91.490723	19.600441	17.292033	15.372431	13.764831	12.409041	11.257783	10.273634	9.426914	8.693793	8.055184	7.493633	7.002664	6.563980	6.177198	5.829390	5.516800