

# Mid Term Exam Intermediate Financial Accounting II Fall 2011 ADM3340

## (SUGGESTED SOLUTIONS)

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

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

### INSTRUCTIONS:

- Write your name and student ID number above.
- Turn off all cell phones.
- This examination “**SUGGESTED SOLUTION**” comprises **4** questions over **16** numbered pages. Answer all questions in this booklet. Booklet is **not** to be removed from the examination room. You may not separate the pages.
- Limit your answer to the space provided. Blank sheets for rough work are given on pages 15 and 16. Rough work on pages 15 and 16 will not be marked.
- This exam will be marked out of 100 marks (for convenience) and is 2½ hours long. You should budget approximately 1.5 minutes per mark. The exam is worth 40% of the overall course mark.
- 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.
- Present value tables are provided on pages **13 and 14**.
- Language (non-electronic) dictionaries are allowed with the proctor’s permission.
- You **must** sign the Statement of Academic integrity on page 2 of this exam.

Question		Marks
1: part 1	Goodwill	/7
1: part 2	Development costs	/9
1: part 3	Impairment: ASPE	/8
1: part 4	Impairment: IFRS	/8
2: part 1	Accounts & notes payable	/7
2: part 2	Contingencies	/4
2: part 3	AROs	/6
3: part 1	Bond liabilities	/9
3: part 2	Bond liabilities	/9
3: part 3	Bond liabilities	/8
3: part 4	Troubled debt restructuring	/8
4: part 1	Terminology	/4
4: part 2	Stock dividend	/4
4: part 3	Basket issuance	/4
4: part 4	Treasury stock	/5
<b>TOTAL</b>		<b>/100</b>

**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 copy or booklet without that signed statement will not be graded and will receive an exam grade of zero.

QUESTION 1 (32 marks)

Answer ALL parts to this question. Each part is independent.

PART 1: (7 marks)

AQUA Ltd. Acquires 100% of the shares of Co. A for \$220. Further details regarding this transaction are presented below.

AQUA Ltd. before its 100% acquisition of Co. A for \$220 cash			
Assets		Sources of Finance	
Cash	1200	Debt	1800
PPE	3400	Shareholders' Equity	2800
	4600		4600
PPE = Property, Plant, & Equipment			
Co. A			
Assets		Sources of Finance	
Cash	30	Debt	80
PPE	220	Shareholders' Equity	170
	250		250
Note: under IAS38, internally developed customer lists, brands, customer loyalty, and mastheads are specifically excluded from being capitalized [in this case by Co. A] as internally generated intangible assets.			
Assume the fair market value of Co. A's identifiable net assets = \$200 [\$200 = Cash \$30 + PPE \$230 + Customer Lists \$10 less Debt \$70]. The customer lists were internally generated by Co. A.			

Required

Present AQUA Ltd.'s journal entry to record its acquisition of Co. A.

	Dr	Cr
Cash	30	
Customer lists	10	
Goodwill (220-200)	20	
PP&E	230	
Debt/liabilities		70
Cash		220

PART 2: (9 marks)

List the six criteria that must be met before development costs of a project may be capitalized.

Solution

1. Technical feasibility of completing the intangible asset
2. The entity's intention to complete it for use or sale
3. The entity's ability to use or sell it
4. Availability of technical, financial, and other resources needed to complete it, and to use or sell it
5. The way in which the future economic benefits will be received; including the existence of a market for the asset if it will be sold, or its usefulness to the entity if it will be used internally
6. The ability to reliably measure the costs associated with and attributed to the intangible asset during its development

Question 1 (32 marks) (continued)

PART 3: (8 marks)

	Limited-Life Intangible Assets.	Indefinite-Life Intangible Assets (excluding Goodwill).
Carrying amount	14,000,000	14,000,000
Fair value	13,600,000	13,600,000
Undiscounted future cash flows from use and eventual sale	14,000,000	15,000,000
Present value of the future cash flows from use and eventual sale	13,000,000	13,700,000
Costs to sell	200,000	200,000

Required

Using the above data complete the following grid, applying ASPE:

	Under ASPE	
	Limited-Life Intangible Assets.	Indefinite-Life Intangible Assets (excluding Goodwill).
Is the asset impaired? Show supporting calculations.	No, because the carrying amount \$14,000,000 does not exceed the sum of the undiscounted cash flows expected to result from its use and eventual disposition of \$14,000,000.	Yes: the impairment test indicates the asset is impaired because its carrying amount of \$14,000,000 exceeds \$13,600,000, its fair value.
If the asset is deemed to be impaired, what is the amount of the impairment loss to be recognized in the income statement? Show supporting calculations.	Not applicable: no impairment identified (see above).	An impairment loss of \$400,000 is recognized: this is the amount by which the \$14,000,000 carrying amount exceeds the \$13,600,000 fair value.
Can an impairment loss reversal be recognized in a subsequent period, and if so, is there a limit to the reversal? Assume the company uses the cost model.	No.  ASPE Section 3063.06: An impairment loss shall not be reversed if the fair value subsequently increases.	No.  ASPE Section 3063.06: An impairment loss shall not be reversed if the fair value subsequently increases.

Question 1 (32 marks) (continued)

Part 4: (8 marks)

	Limited-Life Intangible Assets.	Indefinite-Life Intangible Assets (excluding Goodwill).
Carrying amount	14,000,000	14,000,000
Fair value	13,600,000	13,600,000
Undiscounted future cash flows from use and eventual sale	14,000,000	15,000,000
Present value of the future cash flows from use and eventual sale	13,000,000	13,700,000
Costs to sell	200,000	200,000

Required:

Using the above data complete the following grid, applying IFRS:

	Under IFRS	
	Limited-Life Intangible Assets.	Indefinite-Life Intangible Assets (excluding Goodwill).
Is the asset impaired? Show supporting calculations.	Yes, because the carrying amount of \$14,000,000 exceeds the recoverable amount (defined by IAS 36.6) of \$13,400,000 [which is the higher of the fair value \$13,600,000 less the costs to sell of \$200,000, and the present value of the future cash flows from use and eventual sale \$13,000,000].	Yes, because the carrying amount of \$14,000,000 exceeds the recoverable amount (defined by IAS 36.6) of \$13,700,000 [which is the higher of the fair value \$13,600,000 less the costs to sell of \$200,000, and the present value of the future cash flows from use and eventual sale \$13,700,000].
If the asset is deemed to be impaired, what is the amount of the impairment loss to be recognized in the income statement? Show supporting calculations.	\$600,000 [= the carrying amount of \$14,000,000 less the recoverable amount of \$13,400,000 (= higher of \$13,600,000 - \$200,000 and \$13,000,000)]	\$300,000 [= the carrying amount of \$14,000,000 less the recoverable amount of \$13,700,000 (= higher of \$13,600,000 - \$200,000 and \$13,700,000)]
Can an impairment loss reversal be recognized in a subsequent period, and if so, is there a limit to the reversal? Assume the company uses the cost model.	<p>Yes, under both the cost and revaluation models.</p> <p>IAS 36.114: An impairment loss recognized in prior periods for an asset other than goodwill shall be reversed if, and only if, there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognized. If this is the case, the carrying amount of the asset shall, except as described in paragraph 117, be increased to its recoverable amount. That increase is a reversal of an impairment loss.</p> <p>IAS 36.117: The increased carrying amount of an asset other than goodwill attributable to a reversal of an impairment loss shall not exceed the carrying amount that would have been determined less the amortization or depreciation) had no impairment loss been recognized for the asset in prior years.</p>	<p>Yes, under both the cost and revaluation models.</p> <p>IAS 36.114: An impairment loss recognized in prior periods for an asset other than goodwill shall be reversed if, and only if, there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognized. If this is the case, the carrying amount of the asset shall, except as described in paragraph 117, be increased to its recoverable amount. That increase is a reversal of an impairment loss.</p> <p>IAS 36.117: The increased carrying amount of an asset other than goodwill attributable to a reversal of an impairment loss shall not exceed the carrying amount that would have been determined less the amortization or depreciation) had no impairment loss been recognized for the asset in prior years. [Comment: remember that an indefinite-life asset would have \$0 accumulated amortization].</p>

**QUESTION 2 (17 marks)**

**Answer ALL parts to this question. Each part is independent.**

**PART 1: (7 marks)**

Below are selected transactions of Canary Co. for 2011:

1. On May 10, the company purchased goods from Jay Corp for \$60,000, terms 2/10, n/30. Canary Co. uses the net method for recording all purchases. Canary Co paid one-half of the invoice on May 18 and the balance on June 18.
2. On June 1, the company purchased equipment for \$180,000 from Woodpecker Ltd, paying \$60,000 in cash and giving a one-year, 8% note for the balance.
3. On September 30, the company borrowed \$163,636 from the First National Bank by signing a one year, zero-interest-bearing note for \$180,000. The bank's discount rate was 10%.

**Required**

- (a) Prepare the journal entries necessary to record the transactions above using appropriate dates.
- (b) Prepare the adjusting entries necessary at December 31, 2011 (Canary Co.'s accounting year end) in order to properly report interest expense related to the above transactions.
- (c) Indicate the manner in which the above transactions should be reflected in the Current Liabilities section of Canary Co.'s December 31, 2011 Balance Sheet.

**Solution**

(a) <u>May 10, 2011</u>		
Purchases/Inventory (\$60,000 x .98).....	58,800	
Accounts Payable .....		58,800
<u>May 18, 2011</u>		
Accounts Payable .....	29,400	
Cash .....		29,400
<u>June 18, 2011</u>		
Accounts Payable .....	29,400	
Purchase Discounts Lost.....	600	
Cash .....		30,000
<u>June 1, 2011</u>		
Equipment.....	180,000	
Cash .....		60,000
Notes Payable .....		120,000
<u>September 30, 2011</u>		
Cash .....	163,636	
Notes Payable .....		163,636
(b) Interest Expense.....		
Interest Payable (\$120,000 × .08 × 7/12) .....	5,600	
		5,600
Interest Expense.....		
Notes Payable (\$163,636 x 10% x 3/12) .....	4,091	
		4,091
(c) <u>Current Liabilities</u>		
Interest payable	\$ 5,600	
Note payable—Woodpecker Ltd	120,000	
Note payable—First Provincial Bank (163,636 + 4,091)	<u>167,727</u>	
	<u>\$293,327</u>	

**Question 2 (17 marks) (continued)**

**PART 2: (4 marks)**

The Division A employees union has been negotiating a new contract with Oak Corp. The union is requesting a 5% wage increase retroactive for two years. Oak's management has offered the union a 2% wage increase retroactive for one year. Although negotiations are still ongoing, the company believes that an agreement will soon be reached for a 4% wage increase retroactive for one year, but there is no guarantee that this will be the outcome of the negotiations.

**Required**

Advise Oak Corp on how to reflect the event above in their financial statements for the year ended December 31, 2011.

**Solution**

The event is more likely than not to happen and the cost can be reasonably estimated. Oak Corp should accrue an additional expense for 2011 based on the most likely outcome of a 4% wage increase retroactive for one year. In the notes to the financial statements, they should provide the range for the potential expense (2-5%, 1-2 years).

**PART 3: (6 marks)**

Nickel Mines International Ltd discovered a new bauxite deposit, the Flamingo Mine, and began production on January 1, 2011. The province requires mining companies to return the land to its natural state at the end of mining activity. Nickel Mines International Ltd estimates that it will operate the mine for 25 years, at which time it will cost \$25,000,000 for the land reclamation project. Nickel Mines International Ltd uses an 8% discount rate.

**Required (Show all supporting calculations)**

- (a) Record any obligation for land reclamation as at January 1, 2011.
- (b) Record any entry required related to this obligation at December 31, 2011 .

**Solution**

- (a) January 1, 2011

Flamingo Mine ..... 3,650,447  
    Asset Retirement Obligation..... 3,650,447  
\$3,650,447 is the present value of the \$25,000,000 estimated cost discounted for 25 years at 8%.

- (b) December 31, 2011

Accretion\*/Interest\*\* Expense..... 292,036  
    Asset Retirement Obligation..... 292,036  
\$292,036 is the increase in the present value that occurs because you are one year closer to the expenditure. Present value of \$25,000,000 discounted for 24 years at 8% (\$3,942,483) less \$3,650,447.  
OR  $3,650,447 \times 8\% = 292,036$

\* ASPE  
\*\* IFRS

QUESTION 3 (34 marks)

PART 1: (9 marks)

On November 1, 2011 BondBeagle Inc. issues \$1,500,000 face value bonds. The bond date is February 1, 2011, and the bonds carry a coupon rate of 4% per year, payable semi-annually on January 31 and July 31. The bonds' maturity date is January 31, 2021. The bonds are sold to provide an annual yield of 6%.

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

Required

Present BondBeagle’s journal entry to record the issuance of the bonds: show all supporting calculations.

November 01, 2011	Date of issuance	Dr	Cr
Bond discount		210,580.00	
Cash		1,304,420.00	
	Interest payable		15,000.00
	Bonds payable		1,500,000.00
To record the issuance of 10.00-year bonds, face value \$1,500,000, stated interest rate 4.0000% per annum. The bond date is February 01, 2011 with interest paid semi-annually. There are 111 months (including 19 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.			

The following table is not required in your solution:

	If the bonds were issued on:	
	July 31, 2011	January 31, 2012
	There would be 19 semi-annual interest payments (114 months) between July 31, 2011 and the maturity date, January 31, 2021	There would be 18 semi-annual interest payments (108 months) between January 31, 2012 and the maturity date, January 31, 2021
Present value of the bond's 19.00 semi-annual interest payments of \$30,000 (= \$1,500,000 x 4.0000%/2) at 3.0000% effective interest rate [\$429,714 = 14.3238 x \$30,000]	429,714.00	
Present value of the maturity value of \$1,500,000 at the end of 19.00 periods at 3.0000% effective interest rate [\$855,435 = 0.57029 x \$1,500,000]	855,435.00	
Present value of the bond's 18.00 semi-annual interest payments of \$30,000 (= \$1,500,000 x 4.0000%/2) at 3.0000% effective interest rate [\$412,605 = 13.75351 x \$30,000]		412,605.30
Present value of the maturity value of \$1,500,000 at the end of 18.00 periods at 3.0000% effective interest rate [\$881,085 = 0.58739 x \$1,500,000]		881,085.00
Total	1,285,149.00	1,293,690.30
Bond proceeds, excluding any accrued interest and issuance costs, on November 01, 2011 (which lies between July 31, 2011 and January 31, 2012). \$1,289,420 = \$1,285,149 + {[( \$1,293,690 - \$1,285,149)/6months] x 3months}	1,289,419.65	



Question 3 (34 marks) (continued)

PART 2: (9 marks)

On May 31, 2011 Chongqing Incorporated issues \$1,000,000 face value bonds. The bond date is March 30, 2011, and the bonds carry a coupon rate of 6% per year, payable semi-annually on March 31 and September 30. The bonds' maturity date is March 30, 2031. Proceeds upon issuance, excluding accrued interest, were \$657,769 and the bonds provide an annual yield of 10%.

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

Required

Prepare Chongqing's journal entry for these bonds on October 31, 2012 to update accrued interest and any bond discount amortization. (Show all relevant computations)

To answer this question you must first determine the amortized cost (carrying value) of the bond at September 30, 2012 (shown as \$665,774 below). the interest payment date immediately preceding October 31, 2012..

<div>20123 2013-2030216 (18yrs x 12) 20313 222 months  222/6 = 37 periods</div>		<div>30 Sept 2012 to 30 March 2031: 37 interest payment periods (does not include 30 Sept 2012)  \$30,000 x 16.711287 = \$ 501,339  \$1,000,000 x 0.1644356 = 164,435  Amortized cost at Sept 30, 2012 = \$665,774 (rounded)</div>	
October 31, 2012	The second accounting year-end after the issuance date		
		Dr	Cr
Interest expense		5,548.12	<div>= \$665,774 (see amortization table's semi-annual period 4) x 5.0000% (semi-annual yield) x 1/6 months</div>
Bond discount			<div>548.12 = \$5,548 - \$5,000</div>
Interest payable			<div>= \$1,000,000 x 1/12 months x 6.0000%</div> <div>5,000.00</div>
To record bond interest expense incurred between September 30, 2012 (the third interest payment date after the issuance date) and October 31, 2012. Effective interest rate method.			

PART 3: (8 marks)

On August 1, 2008 (the bond date), Ratnatunga Inc. sold 8%, five year bonds with a maturity value of \$1,000,000 for \$982,000. Interest on the bonds is payable semi-annually on August 1 and February 1. The bonds are callable at 105 at any time after August 1, 2010. By October 1, 2011, the market rate of interest had declined and the market price of Ratnatunga's bonds had risen to 102. The company decides to refund the bonds by selling a new 6% bond issue to mature in five years. On October 1, 2011 Ratnatunga purchases \$300,000 face value in the open market at 102. The \$700,000 face value of the remaining outstanding bonds are purchased from the bond holders on October 1, 2011 by exercising the bonds' call feature.

Required

How much is Ratnatunga's total gain or loss in reacquiring its 8% bonds? Assume the company uses straight-line amortization. Show calculations.

Reacquisition price:		
\$300,000 × 1.02 =	\$306,000	
\$700,000 × 1.05 =	<u>735,000</u>	\$1,041,000
Less carrying value:		
\$982,000 + (\$18,000 × 38/60) =		<u>993,400</u>
Loss on redemption		<u>\$ 47,600</u>

[August 1, 2008 to October 1, 2011 = 38 months]

Question 3 (34 marks) (continued)

**PART 4: (8 marks)**

On December 31, 2010, Romeo is in financial difficulty and cannot pay a \$700,000 note and \$70,000 accrued interest payable on the note to Juliet. Juliet agrees to forgive the accrued interest, extend the maturity date to December 31, 2012, and reduce the interest rate to 4%. The present value of the restructured cash flows of the new debt, using the old note's yield, is \$599,000.

**Required**

Prepare Romeo's journal entry to record the restructure. Show all supporting calculations

**Solution**

- (a) Old debt: PV = \$770,000, using the old debt's discount rate;  
New debt: PV = \$599,000, using the old debt's discount rate.

The new debt differs by more than 10%:  $\$171,000/\$770,000 = 22.2\%$ ; thus, it is a settlement.

Notes Payable (old).....	700,000	
Interest Payable .....	70,000	
Notes Payable (new) .....		700,000
Gain on Restructuring .....		70,000

**Not required in your answer:**

Note that the terms of the new notes payable are (i) a coupon/stated interest rate of 4% and (ii) an extension of the maturity date of the old note payable to December 31, 2012 (i.e., the face value of \$700,000 remains unchanged). Thus, the new notes payable should be recorded with the same face value (\$700,000) of the old notes payable.

The interest payment schedule is prepared as follows:				
Romeo				
INTEREST PAYMENT SCHEDULE AFTER DEBT RESTRUCTURING				
EFFECTIVE INTEREST RATE 4%				
Date	Cash Interest (4%)	Effective Interest (4%)	Reduction/ increase of carrying amount	Carrying Amount of Note
31/12/2010				\$700,000
31/12/2011	\$28,000	\$28,000	\$0	700,000
31/12/2012	\$28,000	\$28,000	\$0	700,000

The old debt's IRR/Yield/Effective interest rate: can be deduced as follows, using MS Excel or a financial calculator:

31/12/2010	(\$599,000)
31/12/2011	\$28,000
31/12/2012	\$728,000
The old debt's IRR/Yield/Effective interest rate:	12.61%

QUESTION 4 (17 marks)

Answer ALL parts to this question. Each part is independent.

**PART 1: (4 marks)**

**Required**

Match the following terms to the definitions given in the table below by entering the appropriate letter in the left column. Each term may be used more than once or not at all.

**Terms**

- A. Stock dividend
- B. Liability dividend
- C. Property dividend
- D. Cash dividend
- E. None of these.

**Definitions**

	1: Issuance of additional shares to each shareholder at no cost.
	2: Issuance of a dividend that decreases both retained earnings and noncash assets.
	3: Issuance of a stock split.
	4: A dividend that does not change total assets, liabilities, or shareholders' equity.
	5: A dividend that decreases cash and shareholders' equity when declared and paid.
	6: A dividend that decreases retained earnings and increases contributed capital.

*Solution*

*1:A, 2:C, 3:A or E, 4:A, 5:D, 6:A*

**PART 2: (4 marks)**

On July 1, 2011, the Board of Directors of Wallabies Rugby Limited Limited declared a stock dividend that required the issuance of 5,000 common shares. The common shares had a market value at this date of \$18 per share. Retained earnings amounted to \$900,000. On August 15, the stock dividend was distributed.

**Required**

Record the journal entries to record the declaration of the stock dividend on July 1, 2011 and the issuance of the stock dividend on August 15, 2011, assuming the 5,000 shares represented 10% of the previously outstanding shares.

*Solution*

<i>July 1, 2011</i>		
<i>Retained Earnings</i>	<i>90,000</i>	
<i>Stock Dividend Distributable</i>		<i>90,000</i>
<i>August 15, 2011</i>		
<i>Stock Dividend Distributable</i>	<i>90,000</i>	
<i>Common Shares (5,000 x \$18)</i>		<i>90,000</i>

**Question No. 4 (17 marks) (continued)**

**PART 3: (4 marks)**

Hyderabad Corp. issued a block comprising 10,000 common shares, no par, and 1,600 preferred shares. At the time of issuance, the common shares were selling at \$15 per share. There is no current market value for the preferred shares. Total cash received was \$262,000.

**Required**

Prepare the journal entry to record the issuance of the shares.

*Solution: (incremental method must be used since the market value for the preferred shares is not known)*

<i>Cash</i>	<i>262,000</i>	
<i>Common shares</i>		<i>150,000</i>
<i>Preferred shares (plug)</i>		<i>112,000</i>

**PART 4: (5 marks)**

On February 1, 2012, Gretzky Corporation was incorporated and issued 10,000 no-par common shares for \$14 per share. On March 4, 2012, Gretzky bought back 6% of its common shares at \$15.50 per share to be held as treasury stock. On May 15, 2012 Gretzky resold 100 treasury shares at \$17 per share. An additional 200 treasury shares were resold on May 20, 2012 at \$18 per share. The balance of the treasury shares was resold on May 30, 2012 for \$13 per share.

**Required**

Prepare the journal entry to record the sale on May 30, 2012. Show supporting computations.

*Solution*

*May 30, 2012:*

<i>Cash (300 x \$13/share)</i>	<i>3,900</i>	
<i>Contributed capital – TS retirement</i>	<i>650</i>	
<i>(\$150* + \$500**)</i>		
<i>Retained earnings</i>	<i>100</i>	
<i>(\$4,650 – \$3,900 – \$650)</i>		
<i>Treasury stock (300 x \$15.50)</i>		<i>4,650</i>

\* \$150 = 100 x (\$17 - \$15.50)

\*\* \$500 = 200 x (\$18 - \$15.50)

Financial Tables

Table	2: PRESENT VALUE of \$1.00 that is received in the future.											
Period/Per	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	0.9900990	0.9803922	0.9708738	0.9615385	0.9523810	0.9433962	0.9345794	0.9259259	0.9174312	0.9090909	0.9009009	0.8928571
2	0.9802960	0.9611688	0.9425959	0.9245562	0.9070295	0.8899964	0.8734387	0.8573388	0.8416800	0.8264463	0.8116224	0.7971939
3	0.9705901	0.9423223	0.9151417	0.8889964	0.8638376	0.8396193	0.8162979	0.7938322	0.7721835	0.7513148	0.7311914	0.7117802
4	0.9609803	0.9238454	0.8884870	0.8548042	0.8227025	0.7920937	0.7628952	0.7350299	0.7084252	0.6830135	0.6587310	0.6355181
5	0.9514657	0.9057308	0.8626088	0.8219271	0.7835262	0.7472582	0.7129862	0.6805832	0.6499314	0.6209213	0.5934513	0.5674269
6	0.9420452	0.8879714	0.8374843	0.7903145	0.7462154	0.7049605	0.6663422	0.6301696	0.5962673	0.5644739	0.5346408	0.5066311
7	0.9327181	0.8705602	0.8130915	0.7599178	0.7106813	0.6650571	0.6227497	0.5834904	0.5470342	0.5131581	0.4816584	0.4523492
8	0.9234832	0.8534904	0.7894092	0.7306902	0.6768394	0.6274124	0.5820091	0.5402689	0.5018663	0.4665074	0.4339265	0.4038832
9	0.9143398	0.8367553	0.7664167	0.7025867	0.6446089	0.5918985	0.5439337	0.5002490	0.4604278	0.4240976	0.3909248	0.3606100
10	0.9052870	0.8203483	0.7444093	0.6755642	0.6139133	0.5583948	0.5083493	0.4631935	0.4224108	0.3855433	0.3521845	0.3219732
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
12	0.8874492	0.7884932	0.7013799	0.6245970	0.5568374	0.4969694	0.4440120	0.3971138	0.3555347	0.3186308	0.2858408	0.2566751
13	0.8786626	0.7730325	0.6809513	0.6005741	0.5303214	0.4688390	0.4149644	0.3676979	0.3261786	0.2896644	0.2575143	0.2291742
14	0.8699630	0.7578750	0.6611178	0.5774751	0.5050680	0.4423010	0.3878172	0.3404610	0.2992465	0.2633313	0.2319948	0.2046198
15	0.8613495	0.7430147	0.6418619	0.5552645	0.4810171	0.4172651	0.3624460	0.3152417	0.2745380	0.2393920	0.2090043	0.1826963
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
17	0.8443775	0.7141626	0.6050164	0.5133732	0.4362967	0.3713644	0.3165744	0.2702690	0.2310732	0.1978447	0.1696326	0.1456443
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
19	0.8277399	0.6864308	0.5702860	0.4746424	0.3957340	0.3305130	0.2765083	0.2317121	0.1944897	0.1635080	0.1376776	0.1161068
20	0.8195445	0.6729713	0.5536758	0.4563869	0.3768895	0.3118047	0.2584190	0.2145482	0.1784309	0.1486436	0.1240339	0.1036668
21	0.8114302	0.6597758	0.5375493	0.4388336	0.3589424	0.2941554	0.2415131	0.1986557	0.1636981	0.1351306	0.1117423	0.0925596
22	0.8033962	0.6468390	0.5218925	0.4219554	0.3418499	0.2775051	0.2257132	0.1839405	0.1501817	0.1228460	0.1006687	0.0826425
23	0.7954418	0.6341559	0.5066917	0.4057263	0.3255713	0.2617973	0.2109469	0.1703153	0.1377814	0.1116782	0.0906925	0.0737880
24	0.7875661	0.6217215	0.4919337	0.3901215	0.3100679	0.2469785	0.1971466	0.1576993	0.1264049	0.1015256	0.0817050	0.0658821
25	0.7797684	0.6095309	0.4776056	0.3751168	0.2953028	0.2329986	0.1842492	0.1460179	0.1159678	0.0922960	0.0736081	0.0588233
26	0.7720480	0.5975793	0.4636947	0.3606892	0.2812407	0.2198100	0.1721955	0.1352018	0.1063925	0.0839055	0.0663136	0.0525208
27	0.7644039	0.5858620	0.4501891	0.3468166	0.2678483	0.2073680	0.1609304	0.1251868	0.0976078	0.0762777	0.0597420	0.0468936
28	0.7568356	0.5743746	0.4370768	0.3334775	0.2550936	0.1956301	0.1504022	0.1159137	0.0895484	0.0693433	0.0538216	0.0418693
29	0.7493421	0.5631123	0.4243464	0.3206514	0.2429463	0.1845567	0.1405628	0.1073275	0.0821545	0.0630394	0.0484879	0.0373833
30	0.7419229	0.5520709	0.4119868	0.3083187	0.2313774	0.1741101	0.1313671	0.0993773	0.0753711	0.0573086	0.0436828	0.0333779
31	0.7345771	0.5412460	0.3999871	0.2964603	0.2203595	0.1642548	0.1227730	0.0920160	0.0691478	0.0520987	0.0393539	0.0298017
32	0.7273041	0.5306333	0.3883370	0.2850579	0.2098662	0.1549574	0.1147411	0.0852000	0.0634384	0.0473624	0.0354540	0.0266087
33	0.7201031	0.5202287	0.3770262	0.2740942	0.1998725	0.1461862	0.1072347	0.0788889	0.0582003	0.0430568	0.0319405	0.0237577
34	0.7129733	0.5100282	0.3660449	0.2635521	0.1903548	0.1379115	0.1002193	0.0730453	0.0533948	0.0391425	0.0287752	0.0212123
35	0.7059142	0.5000276	0.3553834	0.2534155	0.1812903	0.1301052	0.0936629	0.0676345	0.0489861	0.0355841	0.0259236	0.0189395
36	0.6989249	0.4902232	0.3450324	0.2436687	0.1726574	0.1227408	0.0875355	0.0626246	0.0449413	0.0323492	0.0233546	0.0169103
37	0.6920049	0.4806109	0.3349829	0.2342968	0.1644356	0.1157932	0.0818088	0.0579857	0.0412306	0.0294083	0.0210402	0.0150985
38	0.6851534	0.4711872	0.3252262	0.2252854	0.1566054	0.1092389	0.0764569	0.0536905	0.0378262	0.0267349	0.0189551	0.0134808
39	0.6783697	0.4619482	0.3157535	0.2166206	0.1491480	0.1030555	0.0714550	0.0497134	0.0347030	0.0243044	0.0170767	0.0120364
40	0.6716531	0.4528904	0.3065568	0.2082890	0.1420457	0.0972222	0.0667804	0.0460309	0.0318376	0.0220949	0.0153844	0.0107468

Table	4: PRESENT VALUE of Annuity of \$1.00 in arrears.											
Period/Per	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	0.990099	0.980392	0.970874	0.961538	0.952381	0.943396	0.934579	0.925926	0.917431	0.909091	0.900901	0.892857
2	1.970395	1.941561	1.913470	1.886095	1.859410	1.833393	1.808018	1.783265	1.759111	1.735537	1.712523	1.690051
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
4	3.901966	3.807729	3.717098	3.629895	3.545951	3.465106	3.387211	3.312127	3.239720	3.169865	3.102446	3.037349
5	4.853431	4.713460	4.579707	4.451822	4.329477	4.212364	4.100197	3.992710	3.889651	3.790787	3.695897	3.604776
6	5.795476	5.601431	5.417191	5.242137	5.075692	4.917324	4.766540	4.622880	4.485919	4.355261	4.230538	4.111407
7	6.728195	6.471991	6.230283	6.002055	5.786373	5.582381	5.389289	5.206370	5.032953	4.868419	4.712196	4.563757
8	7.651678	7.325481	7.019692	6.732745	6.463213	6.209794	5.971299	5.746639	5.534819	5.334926	5.146123	4.967640
9	8.566018	8.162237	7.786109	7.435332	7.107822	6.801692	6.515232	6.246888	5.995247	5.759024	5.537048	5.328250
10	9.471305	8.982585	8.530203	8.110896	7.721735	7.360087	7.023582	6.710081	6.417658	6.144567	5.889232	5.650223
11	10.367628	9.786848	9.252624	8.760477	8.306414	7.886875	7.498674	7.138964	6.805191	6.495061	6.206515	5.937699
12	11.255077	10.575341	9.954004	9.385074	8.863252	8.383844	7.942686	7.536078	7.160725	6.813692	6.492356	6.194374
13	12.133740	11.348374	10.634955	9.985648	9.393573	8.852683	8.357651	7.903776	7.486904	7.103356	6.749870	6.423548
14	13.003703	12.106249	11.296073	10.563123	9.898641	9.294984	8.745468	8.244237	7.786150	7.366687	6.981865	6.628168
15	13.865053	12.849264	11.937935	11.118387	10.379658	9.712249	9.107914	8.559479	8.060688	7.606080	7.190870	6.810864
16	14.717874	13.577709	12.561102	11.652296	10.837770	10.105895	9.446649	8.851369	8.312558	7.823709	7.379162	6.973986
17	15.562251	14.291872	13.166118	12.165669	11.274066	10.477260	9.763223	9.121638	8.543631	8.021553	7.548794	7.119630
18	16.398269	14.992031	13.753513	12.659297	11.689587	10.827603	10.059087	9.371887	8.755625	8.201412	7.701617	7.249670
19	17.226008	15.678462	14.323799	13.133939	12.085321	11.158116	10.335595	9.603599	8.950115	8.364920	7.839294	7.365777
20	18.045553	16.351433	14.877475	13.590326	12.462210	11.469921	10.594014	9.818147	9.128546	8.513564	7.963328	7.469444
21	18.856983	17.011209	15.415024	14.029160	12.821153	11.764077	10.835527	10.016803	9.292244	8.648694	8.075070	7.562003
22	19.660379	17.658048	15.936917	14.451115	13.163003	12.041582	11.061240	10.200744	9.442425	8.771540	8.175739	7.644646
23	20.455821	18.292204	16.443608	14.856842	13.488574	12.303379	11.272187	10.371059	9.580207	8.883218	8.266432	7.718434
24	21.243387	18.913926	16.935542	15.246963	13.798642	12.550358	11.469334	10.528758	9.706612	8.984744	8.348137	7.784316
25	22.023156	19.523456	17.413148	15.622080	14.093945	12.783356	11.653583	10.674776	9.822580	9.077040	8.421745	7.843139
26	22.795204	20.121036	17.876842	15.982769	14.375185	13.003166	11.825779	10.809978	9.928972	9.160945	8.488058	7.895660
27	23.559608	20.706898	18.327031	16.329586	14.643034	13.210534	11.986709	10.935165	10.026580	9.237223	8.547800	7.942554
28	24.316443	21.281272	18.764108	16.663063	14.898127	13.406164	12.137111	11.051078	10.116128	9.306567	8.601622	7.984423
29	25.065785	21.844385	19.188455	16.983715	15.141074	13.590721	12.277674	11.158406	10.198283	9.369606	8.650110	8.021806
30	25.807708	22.396456	19.600441	17.292033	15.372451	13.764831	12.409041	11.257783	10.273654	9.426914	8.693793	8.055184
31	26.542285	22.937702	20.000428	17.588494	15.592811	13.929086	12.531814	11.349799	10.342802	9.479013	8.733146	8.084986
32	27.269589	23.468335	20.388766	17.873551	15.802677	14.084043	12.646555	11.434999	10.406240	9.526376	8.768600	8.111594
33	27.989693	23.988564	20.765792	18.147646	16.002549	14.230230	12.753790	11.513888	10.464441	9.569432	8.800541	8.135352
34	28.702666	24.498592	21.131837	18.411198	16.192904	14.368141	12.854009	11.586934	10.517835	9.608575	8.829316	8.156564
35	29.408580	24.998619	21.487220	18.664613	16.374194	14.498246	12.947672	11.654568	10.566821	9.644159	8.855240	8.175504
36	30.107505	25.488842	21.832252	18.908282	16.546852	14.620987	13.035208	11.717193	10.611763	9.676508	8.878594	8.192414
37	30.799510	25.969453	22.167235	19.142579	16.711287	14.736780	13.117017	11.775179	10.652993	9.705917	8.899635	8.207513
38	31.484663	26.440641	22.492462	19.367864	16.867893	14.846019	13.193473	11.828869	10.690820	9.732651	8.918590	8.220993
39	32.163033	26.902589	22.808215	19.584485	17.017041	14.949075	13.264928	11.878582	10.725523	9.756956	8.935666	8.233030
40	32.834686	27.355479	23.114772	19.792774	17.159086	15.046297	13.331709	11.924613	10.757360	9.779051	8.951051	8.243777

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**(pages 15 and 16 will not be marked)**

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**(pages 15 and 16 will not be marked)**