Mid Term Exam
Intermediate Financial Accounting II
Winter 2010
ADM3340

(SUGGESTED SOLUTIONS)

Name: _____ **ID#:** _____

Instructions:

1. Write your name and student ID number above.

2. Turn off all cell phones.

2. This examination "SUGGESTED SOLUTION" comprises **3** questions over 12 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 will be marked out of 75 marks (for convenience) and is 2½ hours long. You should budget approximately 2 minutes per mark. The exam is worth 40% of the overall course 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 14.

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	Investments	/25
2	Liabilities	/25
3	Shareholders Equity	/25
TOTAL		/75

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 a final exam grade of zero.

QUESTION 1 (25 marks)

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

PART 1: (10 marks)

To earn returns on its excess cash and to minimize risk, Tupelo Corporation invests its excess cash in investment-grade corporate bonds. Tupelo has a December 31 accounting year-end. The following describes the events surrounding one of Tupelo's recent investments:

1. On March 1, 2007, Tupelo paid $500,000 to purchase bonds of Branson Inc. These bonds had a face value of $500,000 and pay interest on December 31 at the rate of 6.5%. Tupelo incurred transaction costs of $3,000 and capitalizes such costs where permitted under current Canadian accounting standards.

2. On December 31, 2007, the market value of the bonds was $510,000.

3. On January 31, 2008, Tupelo sold the bonds for $515,000 plus accrued interest.

Required:

Complete the following table by indicating the relevant accounts and amounts that need to be reported on the Balance Sheet at the end of 2007 and as part of regular income and other comprehensive income for 2007 and 2008 under the following 3 scenarios:

(i) Tupelo designates the bonds as a held-to-maturity (HTM) investment.
(ii) Tupelo designates the bonds as an available-for-sale (AFS) investment.
(iii) Tupelo designates the bonds as a held-for-trading (HFT) investment.

Use the following format to present your answer and show supporting calculations on the next page. Ignore income taxes. Show all answers to the nearest dollar. (10 marks)

Answer:

	HTM	**AFS**	**HFT**
Balance Sheet presentation at December 31, 2007			
Investment in Branson Inc. bonds	*$503,000*	*$510,000*	*$510,000*
Regular Income Statement for 2007			
Interest revenue ($500,000 x .065 x 10/12)	*27,083*	*27,083*	*27,083*
Unrealized gain			*10,000*
Transactions expenses			*(3,000)*
Regular Income Statement for 2008			
Interest revenue ($500,000 x .065 x 1/12)	*2,708*	*2,708*	*2,708*
Gain on sale ($515,000 – $503,000)	*12,000*		
Gain on sale ($515,000 – $503,000)		*12,000*	
Gain on sale ($515,000 – $510,000)			*5,000*
Other Comprehensive Income (OCI) Statement			
OCI 2007			
Unrealized gain ($510,000 – $503,000)		*7,000*	
OCI 2008			
Reversal of unrealized gain		*(7,000)*	

Question 1 (25 marks) (continued)

PART 2: (15 marks)

Gallagher Limited acquired 43,000 of the 215,000 outstanding voting common shares of Armstrong Corporation on January 1, 2007 for $322,500. At the date of purchase, Armstrong's balance sheet included common shares outstanding of $600,000 and retained earnings of $700,000. At that date, Armstrong had equipment with a net book value of $100,000 and fair value of $125,000. All other identifiable assets and liabilities had fair values equal to book value, and the equipment had a remaining useful life of 4 years. Armstrong had net income for the year of $260,000 and paid dividends of $90,000. Gallagher was considering acquiring an additional 31% of the outstanding voting shares of Armstrong in 2008. On December 31, 2007, the fair value of Armstrong's shares was $10 per share.

On January 1, 2007 Gallagher also acquired Zadeh Company 6% bonds with a maturity value of $400,000. The bonds mature on January 1, 2017 and pay interest every January 1 and July 1. The market rate of interest on the purchase date was 8%. Gallagher planned to hold its investment in Zadeh bonds until maturity. The bonds had a fair value of $505,000 on December 31, 2007.

Required:

(a) Assume Gallagher Limited has significant influence over Armstrong. Use a T-account and compute the net book value of Gallagher's investment in Armstrong on December 31, 2007. (5 marks)

(b) Assume that Gallagher does not exercise significant influence over Armstrong. Describe how Gallagher should account for its investment in the Armstrong shares on both its Balance Sheet and Income Statement. (3 marks)

(c) Prepare the journal entry to record Gallagher's investment in Zadeh's bonds on January 1, 2007. (3 marks)

(d) Prepare any journal entry (or entries) required for Gallagher's investment in Zadeh's bonds on December 31, 2007. (4 marks)

Answer:

(a)

Investment in Armstrong Corporation

322,500	*18,000*
52,000	*1,250*
355,250	

(b) Gallagher should account for its investment in Armstrong as an available-for-sale investment for the year ended December 31, 2007. Therefore, any dividends recorded must be recorded as investment revenue (or dividend revenue) and Gallagher will need to increase the fair value of Armstrong's shares by $107,500 [($10.00 – $7.50) x $43,000] to $430,000 as an increase in its investment account and as an increase to other comprehensive income.

(c)

Held-to-maturity investment – Zadeh bonds	*345,639*	
Cash		*345,639*

FV = $400,000; n = 10 x 2 = 20; i = 8% / 2 = 4%; PMT = $12,000 (PVOA factor= 13.590326)
Solve for PV = $345,639

(d)

Held-to-maturity Investment – Zadeh Bonds	*1,899*	
Interest Receivable	*12,000*	
Interest Revenue		*13,899*

Interest revenue: ($345,639 + 1,826) x 4% = $13,899*
Discount amortization: $13,899 – $12,000 = $1,899

** 1,826 = $345,639 x 4% for the 6 months ending July 1, 2007.*

QUESTION 2 (25 marks)

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

<u>PART 1:</u> (7 marks)

On March 1, 2007 BondBeagle Inc. issues $1,000,000 face value bonds. The bond date is January 31, 2007 and the bonds carry a coupon rate of 6% per year, payable semi-annually on January 31 and July 31. The bonds' maturity date is January 31, 2022. The bonds provide an annual yield of 8%.

BondBeagle Inc. uses the effective interest rate method to amortize any bond premium or discount. BondBeagle Inc.'s accounting year-end is September 30.

Instructions

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

March 01, 2007	Date of issuance	Dr	Cr
Bond discount		172,405.70	
Cash		832,594.30	
	Interest payable		5,000.00
	Bonds payable		1,000,000.00

To record the issuance of 15.00-year bonds, face value $1,000,000, stated interest rate 6.0000% per annum.
The bond date is January 31, 2007 with interest paid semi-annually.
There are 179 months (including 30 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.

Face value	$1,000,000	
Stated interest rate	6.00%	per year = 3.0000% semi-annually.
Effective interest rate (Yield)	4.00%	semi-annually.
Issue date	March 1, 2007, 1 month after January 31, 2007, the closest preceding interest payment date.	
Maturity date	January 31, 2022, 6 months after July 31, 2021, the closest preceding interest payment date.	

Accrued interest payable on the issuance date	5,000.00	= $1,000,000 x 6.0000% x 1/12 months
Bond proceeds, excluding any accrued interest and issuance costs (see detailed calculation below)	827,594.30	= $827,081 + [($830,161 - $827,081) x 1/6 months]
Face value of bonds	1,000,000.00	
Bond discount	-172,405.70	= $827,594 - $1,000,000
Total proceeds on issuance, including accrued interest payable	832,594.30	= $827,594 + $5,000

The closest preceding interest payment date to the issuance date is	January 31, 2007	(1 month before March 1, 2007)
Issuance date	March 1, 2007	
The first interest payment date after the issuance date is	July 31, 2007	(5 months after March 1, 2007)

	If the bonds were issued on:	
	January 31, 2007	July 31, 2007
	There would be 30 semi-annual interest payments (180 months) between January 31, 2007 and the maturity date, January 31, 2022	There would be 29 semi-annual interest payments (174 months) between July 31, 2007 and the maturity date, January 31, 2022
Present value of the bond's 30.00 semi-annual interest payments of $30,000 (= $1,000,000 x 6.0000%/2) at 4.0000% effective interest rate [$518,761 = 17.29203 x $30,000]	518,760.90	
Present value of the maturity value of $1,000,000 at the end of 30.00 periods at 4.0000% effective interest rate [$308,320 = 0.30832 x $1,000,000]	308,320.00	
Present value of the bond's 29.00 semi-annual interest payments of $30,000 (= $1,000,000 x 6.0000%/2) at 4.0000% effective interest rate [$509,511 = 16.98371 x $30,000]		509,511.30
Present value of the maturity value of $1,000,000 at the end of 29.00 periods at 4.0000% effective interest rate [$320,650 = 0.32065 x $1,000,000]		320,650.00
Total	827,080.90	830,161.30
Bond proceeds, excluding any accrued interest and issuance cost, on March 01, 2007 (which lies between January 31, 2007 and July 31, 2007). $827,594 = $827,081 + {[($830,161 - $827,081)/6months] x 1months}	827,594.30	

Question 2 (25 marks) (continued)

PART 2: (9 marks)

On May 1, 2008 Selangor Inc. issues $2,000,000 face value bonds. The bond date is March 1, 2008 and the bonds carry a coupon rate of 10% per year, payable semi-annually on March 1 and September 1. The bonds' maturity date is February 28, 2014 (these are 6 year bonds). Proceeds upon issuance, excluding accrued interest, were $1,835,638, and the bonds provide an annual yield of 12%.

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

Required:
Present the journal entry for these bonds on September 1, 2009.

$100,000 x 7.360087 = $ 736,008
$2,000,000 x 0.558395 = 1,116,790
Amortized cost at
March 1, 2009 = $1,852,798

To answer this question you must first determine the amortized cost (carrying value) of the bond at March 1, 2009 (shown as $1,852,798 below).

Intro | INPUT | Text | Date_Tables | Issuance_Calc | Issuance | I1 | I2 | I3 | I4 | I5 | Retirement | R1 | R2 | R3 | R4 | R5 | Maturity | Amort_Table | IRR

	B	C	D	E	F
2	September 1, 2009	The third interest payment date after the issuance date	Dr	Cr	Instructions: Enter your data in the INPUT screen: all other screens are "Output screens".
3	Interest expense		111,167.90		= $1,852,798 (see amortization table's semi-annual period 3) x 6.0000% (semi-annual yield) x 6/6 months
4		Bond discount		11,167.90	= $111,168 - $100,000
5		Interest payable		100,000.00	= $2,000,000 x 6/12 months x 10.0000%
6	To record bond interest expense incurred between March 01, 2009 (the second interest payment date after the issuance date) and September 01, 2009. Effective interest rate method.				
7					
8					
9					
10	Interest payable		100,000.00		
11		Cash		100,000.00	
12	To record the bond interest payment.				

Question 2 (25 marks) (continued)

PART 3: (9 marks)

Below is the amortization table for $3,000,000 face value bonds that Snowy Mountains Inc. issued on August 1, 2008. Interest is paid annually.

Snowy Mountains Inc.'s accounting year-end is August 31, at which time the company makes appropriate adjusting journal entries. On January 1, 2012 Snowy Mountains Inc. retires 25% of the bonds at 101%, excluding accrued interest.

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

			Beginning Balances		Data for journal entries			
			Bond Premium A/C	Net bond liability (book or carrying value, or amortized cost), beginning of the period.	Debit Interest Expense A/C	Credit Cash A/C	Debit Bond Premium A/C	Net bond liability (amortized cost) at the end of the period.
					10.0000% (=yield) interest expense per interest payment period.	12.0000% [12.0000%/1] interest payment per period.	Bond premium amortization.	
		A	B	C	D	E	F	G
Date at beginning of period	Date at end of period	Period			D = C x 10.0000% (See Notes below this table for period 1's $274,339 calculation)	$300,000 in period 1 does not include repayment by the company of the $60,000 interest accrued on August 01, 2008, the date of issuance ($300,000 + $60,000 = $360,000)	F = D - E	G = C + F (See Notes below this table for period 1's $3,261,316 calculation)
01-Aug-08	31-May-09	1	286,977	3,286,977	274,339	300,000	-25,661	3,261,316
01-Jun-09	31-May-10	2	261,316	3,261,316	326,132	360,000	-33,868	3,227,447
01-Jun-10	31-May-11	3	227,447	3,227,447	322,745	360,000	-37,255	3,190,192
01-Jun-11	31-May-12	4	190,192	3,190,192	319,019	360,000	-40,981	3,149,211
01-Jun-12	31-May-13	5	149,211	3,149,211	314,921	360,000	-45,079	3,104,132
01-Jun-13	31-May-14	6	104,132	3,104,132	310,413	360,000	-49,587	3,054,545
01-Jun-14	31-May-15	7	54,545	3,054,545	305,455	360,000	-54,545	3,000,000

Required:

Provide all entries required on January 1, 2012 to record the bond retirement.

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

Date of retirement January 1, 2012	Dr	Cr	
Interest expense	26,584.93		= $3,190,192 (net bond liability at beginning of June 01, 2011) x 10.000000% (annual yield) x 4/12 months x 25.0000% retired.
Bond premium	3,415.07		= $30,000 - $26,585
Interest payable		30,000.00	= $3,000,000 x 25.0000% retired x 4/12 months x 12.0000%
To record interest expense incurred on 25.0000% of the bonds between August 31, 2011 (the closest preceding accounting year-end date to the retirement date) and January 01, 2012. Effective interest rate method. [Note: January 01, 2012 is neither an accounting year-end or a bond interest payment anniversary date.]			

			= $30,000 (see above journal entry) + $22,500 (= $3,000,000 x 25.0000% retired x 3/12 months x 12.0000% accrued at August 31, 2011) May 31, 2011 is the closest preceding interest payment date to the date of retirement.
Interest payable	52,500.00		
Bond payable	750,000.00		= $3,000,000 x 25.0000% retired
			= $190,192 x 25.00% (unamortized at beginning of June 01, 2011) - $5,976 [$5,976 = ($3,190,192 x 10.000000% yield x 7/12 x 25.00%) - ($3,000,000 x 12.0000% interest paid x 7/12 x 25.00%) amortization, May 31, 2011 to January 01, 2012 on the 25.00% retired)]. May 31, 2011 is the closest preceding interest payment date to the date of retirement.
Bond premium	41,571.61		
			= $757,500 (=$3,000,000 x 25.0000% x 101.0000%) + $30,000 accrued (as appears in the journal entry above) + $22,500 accrued at August 31, 2011
Cash		810,000.00	
Gain on bond retirement		34,071.61	= ($810,000 - $52,500) - ($750,000 + $41,572)
To record the retirement at 101.0000% of 7.00 year 12.0000% bonds, issued August 01, 2008, face value $750,000.			

QUESTION 3 (25 marks)

Answer all five (5) parts. Each part is independent.

PART 1: (6 marks)

Required:

Match the following terms to the definitions given in the table below by entering the appropriate letter to the left. 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.

Answer:

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

PART 2: (8 marks)

DXC has the following data pertaining to its outstanding shares:

- $5 Preferred, 2,000 shares issued at $100 per share;
- Common, no-par value, 5,000 shares issued at $60 per share;
- Matching dividend, if applicable, $3.

Required:

Compute the amount of dividends per share payable to each class of shares for each of the following independent cases. Show computations.

	Per Share		
	Preferred Stock Provisions	**Preferred**	**Common**
(a)	Preferred is noncumulative and nonparticipating. Dividends declared, $40,000	$_____	$_____
(b)	Preferred is cumulative and nonparticipating; in arrears three years (in addition to the current year). Dividends declared, $65,000	$_____	$_____
(c)	Preferred is cumulative, in arrears three years (in addition to the current year); fully participating. Dividends declared, $75,000.	$_____	$_____

Question No. 3 (25 marks) (continued)

Answer:

Share	*Capital common*	=	*$300,000*	*(60%)*
	Preferred	=	*$200,000*	*(40%)*
	Total	=	*$500,000*	*(100%)*

(a)	Preferred: $2,000 x $5 = $10,000 ÷ 2,000 shares	=	$5.00
	Common: $40,000 - $10,000 = $30,000 ÷ 5,000 shares	=	$6.00
(b)	Preferred: $30,000 + $10,000 = 40,000 ÷ 2,000 shares	=	$20.00
	Common: $65,000 - $40,000 = $25,000 ÷ 5,000 shares	=	$5.00
(c)	Preferred: $30,000 + $10,000 + $8,000(ii) = $48,000 ÷ 2,000	=	$24.00
	Common: $15,000(i) + $12,000(iii) = $27,000 ÷ 5,000	=	$5.40

(i)	5,000 x $3	
(ii)	75,000 - (30,000 - 10,000) - 15,000	= 20,000; 20,000 x
	(200,000 ÷ [200,000 + 300,000])	= 8,000
(iii)	20,000 x (300,000 ÷ [200,000 + 300,000])	= $12,000

The above solution uses the respective share capital balances to determine the participation in the $20,000 [=75,000 – (30,000 + 10,000) – 15,000].

Below the year's base dividends are used to determine the participation in the $20,000. The participation is coincidentally the same under both approaches.

(i)	*5,000 x $3*	*15,000*
(ii)	*75,000 – (30,000 + 10,000) – 15,000*	*20,000*
	20,000 x 10,000/(10,000 + 15,000)	*8,000*
(iii)	*20,000 x 15,000/(10,000 + 15,000)*	*12,000*

PART 3: (3 marks)

On July 1, 2007, the Board of Directors of BXC declared and distributed 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.

Required:
Record the journal entry to record the stock dividend, assuming the 5,000 shares represented 10% of the previously outstanding shares.

Answer:

Retained Earnings	*90,000*	
Common Shares (5,000 x $18)		*90,000*

PART 4: (3 marks)

Brimley Corp. issued 5,000 common shares, no par, and 800 preferred shares. At the time of issue the common shares were selling at $30 per. There is no current market value for the preferred shares. Total cash received was $162,000.

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

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

Cash	*162,000*	
Common shares		*150,000*
Preferred shares (plug)		*12,000*

Question No. 3 (25 marks) (continued)

PART 5: (5 marks)

On January 1, 2008, Quincy Corporation issued 5,000 no-par common shares for $14 per share. On February 4, 2008 Quincy purchased 10% of its common shares at $16.50 per share to be held as treasury stock. On April 15, 2008 Quincy resold 200 treasury shares at $18 per share. An additional 100 treasury shares were resold on April 20, 2008 at $19 per share. The balance of the treasury shares was resold on April 30, 2008 for $13 per share.

Required:
Prepare the journal entry to record the sale on April 30, 2008. Show supporting computations.

Answer:

April 30, 2008:		
Cash (200 x $13/share)	*2,600*	
Contributed capital – TS retirement	*550*	
($300 + $250)		
Retained earnings	*150*	
($3,300 – $2,600 – $550)		
Treasury stock (200 x $16.50)		*3,300*

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	0.8928571	0.8849558	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	0.8416800	0.8264463	0.8116224	0.7971939	0.7831467	0.7694675	0.7561437	0.7431629	0.7305136	0.7181844
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	0.6930502	0.6749715	0.6575162	0.6406577	0.6243706	0.6086309
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	0.6133187	0.5920803	0.5717532	0.5522911	0.5336500	0.5157889
5	0.9514657	0.9057305	0.8626088	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	0.9420452	0.8879714	0.8374843	0.7903145	0.7462154	0.7049605	0.6663422	0.6301696	0.5962673	0.5644739	0.5346408	0.5066311	0.4803185	0.4555865	0.4323276	0.4104423	0.3899386	0.3704315
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	0.4250606	0.3996373	0.3759370	0.3538295	0.3331954	0.3139250
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	0.3761599	0.3505591	0.3269018	0.3050255	0.2847824	0.2660382
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	0.3328848	0.3075079	0.2842624	0.2629530	0.2434037	0.2254561
10	0.9052870	0.8203483	0.7440939	0.6755642	0.6139133	0.5583948	0.5083493	0.4631935	0.4224108	0.3855433	0.3521845	0.3219732	0.2945883	0.2697438	0.2471847	0.2266836	0.2080374	0.1910645
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	0.3555347	0.3186308	0.2858408	0.2566751	0.2307059	0.2075591	0.1869072	0.1684628	0.1519741	0.1372195
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	0.2041645	0.1820694	0.1625280	0.1452266	0.1298924	0.1162877
14	0.8699630	0.7578750	0.6611178	0.5774751	0.5050680	0.4423010	0.3878172	0.3404610	0.2992465	0.2633313	0.2319948	0.2046195	0.1806766	0.1597100	0.1413287	0.1251953	0.1110192	0.0985489
15	0.8613495	0.7430147	0.6418619	0.5552645	0.4810171	0.4172651	0.3624460	0.3152417	0.2745350	0.2393920	0.2090043	0.1826963	0.1598905	0.1400965	0.1228945	0.1079270	0.0948892	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	0.1068648	0.0930405	0.0811010	0.0707763
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	0.1252179	0.1077997	0.0929259	0.0802074	0.0693171	0.0599799
18	0.8360173	0.7001594	0.5873946	0.4936281	0.4155207	0.3503435	0.2958639	0.2502490	0.2119937	0.1798588	0.1528222	0.1300396	0.1108123	0.0945611	0.0808051	0.0691443	0.0592454	0.0508304
19	0.8277399	0.6864305	0.5702860	0.4746424	0.3957340	0.3305130	0.2765083	0.2317121	0.1944897	0.1635080	0.1376776	0.1161065	0.0980640	0.0829484	0.0702655	0.0596071	0.0506371	0.0430766
20	0.8195445	0.6729713	0.5536758	0.4563869	0.3768895	0.3118047	0.2584190	0.2145482	0.1784309	0.1486436	0.1240339	0.1036665	0.0867823	0.0727617	0.0611003	0.0513855	0.0432796	0.0365056
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	0.0767985	0.0638261	0.0531307	0.0442978	0.0369911	0.0309370
22	0.8033962	0.6468390	0.5218925	0.4219554	0.3418499	0.2775051	0.2257132	0.1839405	0.1501517	0.1228460	0.1006687	0.0826425	0.0679633	0.0559978	0.0462006	0.0381878	0.0316163	0.0262178
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	0.0601445	0.0491121	0.0401744	0.0329205	0.0270225	0.0222185
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	0.0532252	0.0430808	0.0349343	0.0283797	0.0230961	0.0188292
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	0.0471020	0.0377902	0.0303776	0.0244653	0.0197403	0.0159569
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	0.0416831	0.0331493	0.0264153	0.0210908	0.0168720	0.0135228
27	0.7644039	0.5858620	0.4501891	0.3466166	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	0.4370768	0.3334775	0.2550936	0.1956301	0.1504022	0.1159137	0.0895484	0.0693433	0.0538216	0.0418693	0.0326440	0.0255073	0.0199738	0.0156739	0.0123253	0.0097119
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	0.0288885	0.0223748	0.0173685	0.0135120	0.0105344	0.0082304
30	0.7419229	0.5520709	0.4119968	0.3083187	0.2313774	0.1741101	0.1313671	0.0993773	0.0753711	0.0573056	0.0436828	0.0333779	0.0255651	0.0196270	0.0151031	0.0116452	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	0.990099	0.980392	0.970874	0.961538	0.952381	0.943396	0.934579	0.925926	0.917431	0.909091	0.900901	0.892857	0.884956	0.877193	0.869565	0.862069	0.854701	0.847458
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	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	2.283225	2.245890	2.209585	2.174273
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	2.974471	2.913712	2.854978	2.798181	2.743235	2.690062
5	4.853431	73.807729	4.579707	4.451822	4.329477	4.212364	4.100197	3.992710	3.889651	3.790787	3.695897	3.604776	3.517231	3.433081	3.352155	3.274294	3.199346	3.127171
6	5.795476	74.695700	5.417191	5.242137	5.075692	4.917324	4.766540	4.622880	4.485919	4.355261	4.230538	4.111407	3.997550	3.888668	3.784483	3.684736	3.589185	3.497603
7	6.728195	75.566260	6.230283	6.002055	5.786373	5.582381	5.389289	5.206370	5.032953	4.868419	4.712196	4.563757	4.422610	4.288305	4.160420	4.038565	3.922380	3.811528
8	7.651678	76.419751	7.019692	6.732745	6.463213	6.209794	5.971299	5.746639	5.534819	5.334926	5.146123	4.967640	4.798770	4.638864	4.487322	4.343591	4.207163	4.077566
9	8.566018	77.256506	7.786109	7.435332	7.107822	6.801692	6.515232	6.246888	5.995247	5.759024	5.537048	5.328250	5.131655	4.946372	4.771584	4.606544	4.450566	4.303022
10	9.471305	78.076854	8.530203	8.110896	7.721735	7.360087	7.023582	6.710081	6.417658	6.144567	5.889232	5.650223	5.426243	5.216116	5.018769	4.833227	4.658604	4.494086
11	10.367628	78.881117	9.252624	8.760477	8.306414	7.886875	7.498674	7.139964	6.805191	6.495061	6.206515	5.937699	5.686941	5.452733	5.233712	5.028644	4.836413	4.656005
12	11.255077	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	10.634955	9.985648	9.393573	8.852683	8.357651	7.903776	7.486904	7.103356	6.749870	6.423548	6.121812	5.842362	5.583147	5.342334	5.118280	4.909513
14	13.003703	81.200518	11.296073	10.563123	9.898641	9.294984	8.745468	8.244237	7.786150	7.366687	6.981865	6.628168	6.302488	6.002072	5.724476	5.467529	5.229299	5.008062
15	13.865053	81.943533	11.937935	11.118387	10.379658	9.712249	9.107914	8.559479	8.060688	7.606080	7.190870	6.810864	6.462379	6.142168	5.847370	5.575456	5.324187	5.091578
16	14.717874	82.671979	12.561102	11.652296	10.837770	10.105895	9.446649	8.851369	8.312558	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	6.372859	6.047161	5.748704	5.474605	5.222334
18	16.398269	84.086300	13.753513	12.659297	11.689587	10.827603	10.059087	9.371887	8.755625	8.201412	7.701617	7.249670	6.839905	6.467420	6.127966	5.817848	5.533851	5.273164
19	17.226008	84.772731	14.323799	13.133939	12.085321	11.158116	10.335595	9.603599	8.950115	8.364920	7.839294	7.365777	6.937969	6.550369	6.198231	5.877455	5.584488	5.316241
20	18.045553	85.445703	14.877475	13.590326	12.462210	11.469921	10.594014	9.818147	9.128546	8.513564	7.963328	7.469444	7.024752	6.623131	6.259331	5.928841	5.627767	5.352746
21	18.856983	86.105478	15.415024	14.029160	12.821153	11.764077	10.835527	10.016803	9.292244	8.648694	8.075070	7.562003	7.101550	6.686957	6.312462	5.973139	5.664758	5.383683
22	19.660379	86.752317	15.936917	14.451115	13.163003	12.041582	11.061240	10.200744	9.442425	8.771540	8.175739	7.644646	7.169513	6.742944	6.358663	6.011326	5.696375	5.409901
23	20.455821	87.386473	16.443608	14.856842	13.488574	12.303379	11.272187	10.371059	9.580207	8.883218	8.266432	7.718434	7.229658	6.792056	6.398837	6.044247	5.723397	5.432120
24	21.243387	88.008195	16.935542	15.246963	13.798642	12.550358	11.469334	10.528758	9.706612	8.984744	8.348137	7.784316	7.282883	6.835137	6.433771	6.072627	5.746493	5.450949
25	22.023156	88.617726	17.413148	15.622080	14.093945	12.783356	11.653583	10.674776	9.822580	9.077040	8.421745	7.843139	7.329985	6.872927	6.464149	6.097092	5.766234	5.466906
26	22.795204	89.215305	17.876842	15.982769	14.375185	13.003166	11.825779	10.809978	9.929972	9.160945	8.488058	7.895660	7.371668	6.906077	6.490564	6.118183	5.783106	5.480429
27	23.559608	89.801167	18.327031	16.329586	14.643034	13.210534	11.986709	10.935165	10.026580	9.237223	8.547800	7.942554	7.408556	6.935155	6.513534	6.136364	5.797526	5.491889
28	24.316443	90.375542	18.764108	16.663063	14.898127	13.406164	12.137111	11.051078	10.116128	9.306567	8.601622	7.984423	7.441200	6.960662	6.533508	6.152038	5.809851	5.501601
29	25.065785	90.938654	19.188455	16.983715	15.141074	13.590721	12.277674	11.158406	10.198283	9.369606	8.650110	8.021806	7.470088	6.983037	6.550877	6.165550	5.820386	5.509831
30	25.807708	91.490725	19.600441	17.292033	15.372451	13.764831	12.409041	11.257783	10.273654	9.426914	8.693793	8.055184	7.495653	7.002664	6.565980	6.177198	5.829390	5.516806