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Mid Term Exam (SUGGESTED SOLUTIONS)
Intermediate Financial Accounting II
Fall 2019
ADM3340 Sections A and B

Section	Class time/day	Tick one
Section A	Tuesday 8:30am and Friday 10:00am	
Section B	Tuesday 7:00pm	

Name: _____ **ID#:** _____

INSTRUCTIONS

- Write your name and student ID number above and indicate your section.
- Display your student ID on your desk during the exam.
- Reminder: it is an offence to have a cell phone or any other communication device in your possession during this exam's 2.5 hours. (see the Statement of Academic integrity on page 2 of this exam).
- This examination **"SUGGESTED SOLUTION"** comprises 4 multi-part questions over 24 numbered pages.
- Answer all questions in this booklet.
- Booklet is **not** to be removed from the examination room. You may not separate the pages.
- Do not answer questions using a pencil or erasable pen: if you do you will forfeit the right to ask that your exam be remarked.
- Limit your answer to the space provided. Blank sheets for rough work and supporting calculations are given at the end of each question.
- This exam will be marked out of 100 marks (for convenience) and is 2.5 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.
- This exam paper must remain stapled: do not take this exam paper apart.
- Present value tables are provided on pages 22 and 23.
- Language (non-electronic) dictionaries are allowed with the proctor's permission.
- You must provide an audit trail for any answers you generate with an electronic calculator.
- You ***must*** sign the Statement of Academic integrity on page 2 of this exam.

	Question		Marks
Ch 12	1: part 1	Intangible assets and goodwill.	/4
	1: part 2	Impairment.	/8
	1: part 3	Goodwill.	/6
Ch 13	2: part 1	Warranties.	/8
	2: part 2	Premiums.	/9
	2: part 3	Classification of liabilities.	/10
	2: part 4	ARO.	/8
Ch 14	3: part 1	Bond liabilities: interest.	/10
	3: part 2	Bond liabilities: retirement.	/10
	3: part 3	Bond liabilities: exchange.	/11
Ch 15	4: part 1	Various share transactions.	/8
	4: part 2	Dividends.	/8
	SUB-TOTAL		/100
		Bonus marks question.	/3
	TOTAL		/103

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 (18 marks)
Answer ALL parts to this question. Each part is independent.

PART 1: (4 marks)

a) Explain the three main characteristics of intangible assets.
b) Is goodwill an intangible asset? Why, or why not? Explain.

The three main characteristics of intangible assets are that they

1. **are identifiable: Resulting from contractual or other legal rights and/or separable.**
2. **lack physical substance: The value of intangible assets comes from the rights and privileges granted to the company using them.**
3. **are nonmonetary: Do not contain a right (or claim) to receive fixed or determinable amounts of money in the future.**

Goodwill is not an intangible asset because it does not meet the first criterion. It is not separable from the rest of the entity and does not result from contractual or legal rights. For example, synergies of a combined sales force or superior management team cannot be separated from an entity in order to exchange with others.

PART 2: (8 marks)

The following information is for a copyright owned by Lighting Designs Corp., a publically listed company, at December 31, 2020.

Cost	$4,300,000
Carrying amount	2,150,000
Expected future net cash flows (undiscounted)	2,000,000
Expected future net cash flows (discounted)	1,850,000
Fair value	1,600,000
Selling costs	100,000

Assume that Lighting Designs Corp. will continue to use this copyright in the future. As at December 31, 2020, the copyright is estimated to have a remaining useful life of 10 years.

Required

a) Prepare the journal entry, if any, to record the asset's impairment at December 31, 2020.

b) The copyright's fair value at December 31, 2021, is $2.2 million. Prepare the journal entry, if any, to record the increase in fair value.

QUESTION 1 (18 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 2: (8 marks) (continued)

a) **Under IFRS, the recoverable amount is the higher of value in use and fair value less costs to sell (both of which are discounted amounts). In this case, the copyright is impaired at the end of 2020 since:**

Recoverable amount of $1,850,000 < Carrying amount of $2,150,000. The loss on impairment of $300,000 would be recorded.

The journal entry under IFRS would be:

Loss on Impairment	**300,000**	
Accumulated Impairment Losses—Copyrights		**300,000**

b) **Amortization for 2021 will be based on the new carrying amount of $1,850,000, divided over the remaining useful life of 10 years: $185,000.**

Reversal of impairment under IFRS:

If the estimates used to determine the asset's value in use and fair value less costs to sell have changed, then a reversal of the impairment is recognized if the recoverable amount exceeds the carrying amount. The reversal amount, however, is limited. The specific asset cannot be increased in value to more than what its carrying amount would have been, net of accumulated amortization, if the original loss on impairment had never been recognized.

In this situation, there will be a reversal since:

Recoverable amount of $2,200,000 > Carrying amount $1,665,000 ($1,850,000 – amortization of $185,000 for 2021).

The reversal will be limited so that the asset's carrying amount is not more than what its carrying amount would have been, net of accumulated amortization, if the original loss on impairment had never been recognized (i.e., $2,150,000 – amortization of $215,000 for 2021 = $1,935,000).

The reversal will be limited to $270,000 ($1,935,000 - $1,665,000), to adjust the carrying amount to $1,935,000 (not $2,200,000).

The journal entry would be:

Accumulated Impairment Losses-Copyrights.....	**270,000**	
Recovery of Loss from Impairment		**270,000**

QUESTION 1 (18 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 3: (6 marks)

On January 31, 2020, Ibiza Corporation, a publically listed company, acquired the net assets of Lincoln Company in exchange for 10,000 shares: on this date these Ibiza Corporation shares had a fair value of $450,000 net of issuance costs. At January 31, 2020, the statement of financial position of Lincoln Company was as follows:

Cash	$ 15,000	Accounts payable	$200,000
Accounts receivable	102,000	8% bonds payable (due 31/12/2028)	100,000
Inventory	98,000	Shareholders' Equity	179,000
Land	50,000		
Buildings (net)	75,000		
Equipment (net)	90,000		
Trademarks (net)	49,000		
	$479,000		$479,000

Lincoln's above recorded amounts for buildings, equipment, and trademarks are shown net of accumulated amortization of $14,000, $23,000, and $47,000, respectively. But, most of the above recorded amounts do not reflect fair value, including land (fair value = $60,000), inventory (fair value = $125,000), trademarks ($59,000), building ($140,000), and equipment ($100,000). The accounts receivable are shown net of an allowance for doubtful accounts of $12,000 and Ibiza Corporation judges this estimate to be reasonable. Ibiza estimates that Lincoln's brand name has a fair value of $110,000.

Required

Prepare the January 31, 2020 journal entry for Ibiza Corporation to record the purchase.

Cash	**15,000**	
Accounts Receivable	**114,000**	
Inventory	**125,000**	
Trademarks	**59,000**	
Brand name (Lincoln)	**110,000**	
Land	**60,000**	
Buildings	**140,000**	
Equipment	**100,000**	
Goodwill	**39,000**	
Allowance for Doubtful Accounts		**12,000**
Accounts Payable		**200,000**
8% Bonds Payable (due 31/12/2028)		**100,000**
Share Capital*		**450,000**

***When an entity acquired in a business combination the acquisition-date fair value of the shares issued by the acquirer, net of share issuance costs, is used to measure the transaction (IFRS 3). See also bomode.telfer.uottawa.ca/shareissuance/ShareIssuance_Sheet.aspx**

****$411,000 fair value of the net identifiable assets acquired = $723,000 - $312,000.**

QUESTION 2 (35 marks)
Answer ALL parts to this question. Each part is independent.

PART 1: (8 marks)

Novack Machinery Co. manufactures equipment to a very high standard of quality; however, it must still provide a warranty for each unit sold, and there are instances where the machines do require repair after they have been put into use. Novack started in business at the beginning of 2020, and as the controller, you are trying to determine whether to use the assurance-type or service-type warranty approach to measure the warranty obligation. You would like to show the company president how this choice would affect the financial statements for 2020, and advise him of the better choice, keeping in mind that the service-type approach is consistent with IFRS, and that there are plans to take Novack public in a few years.

You have determined that sales on account for the year were 1,000 units, with a selling price of $3,000 each. Ignore any cost of goods sold. The warranty is for two years, and the estimated warranty cost averages $200 per machine. Actual costs of servicing warranties for the year were $105,000. You have done some research and determined that, if the service-type approach were to be used, the portion of revenue allocated to the warranty portion of the sale would be $350 per unit. Because the costs of servicing warranties are not incurred evenly, warranty revenues are recognized based on the proportion of costs incurred out of the total estimated costs.

Required

a) For the assurance-type approach,

(i) prepare the necessary journal entries to record all of the transactions described;

(ii) determine the amounts reported on the financial statements (for the year ending December 31, 2020) of the warranty liability, revenue, and expense amounts.

Do not round intermediate calculations and round final amounts to the nearest dollar. Payments for completed warranty repairs are paid in cash.

Assurance-type (expense approach):

Accounts Receivable	**3,000,000**	
Sales Revenue[1]		**3,000,000**
[1](1,000 X $3,000)		
To record sales on account		

Warranty Expense	**105,000**	
Cash.		**105,000**
To record payment of warranty expense		

Warranty Expense[2]	**95,000**	
Warranty Liability		**95,000**
[2][(1,000 X $200) – $105,000]		
To accrue warranty expense		

OR

Warrant Expense	**200,000**	
Warranty Liability		**200,000**

Warranty Liability	**95,000**	
Cash		**95,000**

Financial statement amounts reported [Assurance-type (expense approach)]:

Balance Sheet, December 31, 2020	
Warranty liability	**$95,000**
Income Statement for year ending December 31, 2020	
Sales revenue	**$3,000,000**
Warranty expense	**200,000**

QUESTION 2 (continued) (35 marks)
Answer ALL parts to this question. Each part is independent.

PART 1: (8 marks) (continued)

b) For the service-type approach,

(i) prepare the necessary journal entries to record all of the transactions described;

(ii) determine the amounts reported on the financial statements (for the year ending December 31, 2020) of the warranty liability, revenue, and expense amounts.

Do not round intermediate calculations and round final amounts to the nearest dollar. Payments for completed warranty repairs are paid in cash.

Service-type (revenue approach):

Accounts Receivable	**3,000,000**	
Sales Revenue		**2,650,000**
Unearned Revenue		**350,000**
To record sales on account		
Warranty Expense	**105,000**	
Cash.		**105,000**
To record warranty expense		
Unearned Revenue	**183,750**	
Warranty Revenue[1]		**183,750**
[1][$350,000 X ($105,000/$200,000)]		
To remeasure unearned revenue		

Financial statement amounts reported [Service-type (revenue approach)]:

Balance Sheet, December 31, 2020	
Unearned revenue	**$166,250**
Income Statement for year ending December 31, 2020	
Sales revenue	**$2,650,000**
Warranty revenue	**183,750**
Warranty expense	**105,000**

QUESTION 2 (continued) (35 marks)
Answer ALL parts to this question. Each part is independent.

PART 2: (9 marks)

Fancie Cosmetics offers its customers a travel-gift-set as a premium in exchange for $20 if the customer purchases one of the top brand cosmetic makeup kits. The company purchased for cash 2,000 travel-gift-sets at $ 25 each. It estimates that 60% of customers will participate in the promotion and that 10% of the amount received from customers relates to the awarded premiums. In 2020, the company sold 3,000 makeup kits at a sales price of $80 resulting in sales revenue of $240,000. By the end of the year, 1,500 customers took advantage of the promotion.

Required

a) Prepare the appropriate journal entries assuming that Fancie follows ASPE and uses the *expense approach*.
b) Prepare the appropriate journal entries assuming that Fancie follows IFRS and uses the *revenue approach*. For this part of the question, assume the selling price includes the offer for the premium.

a)

Inventory of Premiums	**50,000**	
Cash		**50,000**
($25 x 2,000 = $ 50,000)		
Cash	**240,000**	
Sales Revenue		**240,000**
Cash (1,500 x $ 20)	**30,000**	
Premium Expense	**7,500**	
Inventory of Premiums (1,500 x $25)		**37,500**
Premium Expense*	**1,500**	
Estimated Liability for Premiums		**1,500**

OR:

Premium Expense	**9,000**	
Premium Liability		**9,000**
Cash	**30,000**	
Premium Liability	**7,500**	
Inventory of Premiums		**37,500**

*****

Total makeup kits sold:	**3,000**
Total estimated premium redemptions (60%):	**1,800**
Customer redemption in 2020:	**1,500**
Estimated future redemptions:	**300**
Cost per premium: $25 - $20	**$5.00**
Cost of estimated claims outstanding	
(300 x $ 5) =	**$ 1,500**

b)

Inventory of Premiums	**50,000**	
Cash		**50,000**
($ 25 x 2,000 = $ 50,000)		
Cash	**240,000**	
Sales Revenue		**216,000**
Unearned Revenue (10% x $240,000)		**24,000**
Cash (1,500 x $ 20)	**30,000**	
Premium Expense	**7,500**	
Inventory of Premiums[1]		**37,500**
[1](1,500 x $ 25)		
Unearned Revenue	**20,000**	
Sales Revenue		**20,000**
($ 24,000 x 1,500/1,800)		

See also: bomode.telfer.uottawa.ca/premiums/ContractBasedApproach_Sheet.aspx

QUESTION 2 (continued) (35 marks)
Answer ALL parts to this question. Each part is independent.

PART 3: (10 marks)

At their last year end, December 31, 2019, the liabilities outstanding of Zinc Corp. included the following:

1. Cash dividends on common shares, $100,000, payable on January 15, 2020
2. Note payable to Renfrew Bank, $850,000, due January 26, 2020
3. Serial bonds, $2,000,000, of which $500,000 matures during 2020
4. Note payable to Sandy Hill Bank, $300,000, due January 27, 2020

The following transactions occurred early in 2020:

January 15: The cash dividends were paid.

January 25: Zinc entered into a financing agreement with Rimouski Bank, enabling it to borrow up to $1,000,000 at any time through the end of 2021. Amounts borrowed under the agreement would bear interest at 1% above the bank's prime rate and would mature 3 years from the date of the loan. The corporation immediately borrowed $850,000 to be used in paying its January 26 note to Renfrew Bank.

January 26: The note payable to Renfrew Bank was paid.

January 27: 40,000 common shares were issued for $400,000. $400,000 of the proceeds was used to pay off the note payable to Sandy Hill Bank.

February 1: The financial statements for 2019 were issued.

Required

a) Prepare a partial statement of financial position for Zinc Corp., showing the manner in which the above liabilities should be presented at December 31, 2019 under ASPE. The liabilities should be properly classified between current and long-term, and any appropriate note disclosure should be included.

b) Answer the same question as a) if Zinc uses IFRS instead of ASPE.

a)

Current liabilities:		
Dividends payable on common shares	**$ 100,000**	
Currently maturing portion of serial bonds	**500,000**	
Total current liabilities		**$600,000**
Long-term debt:		
Note payable—Sandy Hill Bank—Note 1	**300,000**	
Notes payable—Renfrew Bank – Note 2	**850,000**	
Serial bonds not maturing currently	**1,500,000**	
Total long-term debt		**2,650,000**
Total liabilities		**$3,250,000**

Note 1: On January 27, 2020, the corporation issued 40,000 common shares and received proceeds totalling $400,000, of which $300,000 was used to liquidate a $300,000 note payable that matured on January 27, 2020.
Note 2: On January 25, 2020, the corporation entered into a financing agreement with Rimouski Bank and immediately borrowed $850,000 that was used in paying its January 26 note to Renfrew Bank.

b)

Current liabilities:		
Dividends payable on common shares	**$ 100,000**	
Note payable—Sandy Hill Bank—Note 1	**300,000**	
Notes payable—Renfrew Bank – Note 2	**850,000**	
Currently maturing portion of serial bonds	**500,000**	
Total current liabilities		**$1,750,000**
Long-term debt:		
Serial bonds not maturing currently		**1,500,000**
Total liabilities		**$3,250,000**

Note 1: On January 27, 2020, the corporation issued 40,000 common shares and received proceeds totalling $400,000, of which $300,000 was used to liquidate a $300,000 note payable that matured on January 27, 2020.
Note 2: On January 25, 2020, the corporation entered into a financing agreement with Rimouski Bank and immediately borrowed $800,000 that was used in paying its January 26 note to Renfrew Bank.

QUESTION 2 (continued) (35 marks)
Answer ALL parts to this question. Each part is independent.

PART 4: (8 marks)

ExtraOre Ltd. (EOL) specializes in extracting ore. It prides itself for following high environmental standards in the extraction process. On January 1, 2019, EOL purchased the rights to use a parcel of land from the province of New Caledonia. The rights cost $15,000,000 and allowed the company to extract ore for five years, i.e., until December 31, 2023. EOL expects to extract the ore evenly over the contract period. At the end of the contract, EOL has one year to clean up and restore the land. EOL estimates this will cost $2,000,000.

EOL uses a discounted cash flow method to calculate the fair value of this obligation and believes that 8% is the appropriate discount rate. EOL uses straight-line depreciation method. EOL uses the calendar year as its fiscal year and follows IFRS.

As a helpful suggestion, students may want to draw a timeline of events before solving the questions given below.

Required (Round all values to the nearest dollar.)

a) Prepare the journal entries to be recorded on January 1, 2019.
b) Prepare the journal entries to be recorded on December 31, 2019. Show the amounts and how the accounts would be reported and classified on the classified statement of financial position at December 31, 2019.
c) Prepare the journal entries to be recorded on December 31, 2023. Show the amounts and how the accounts would be reported and classified on the classified statement of financial position at December 31, 2023.

a) To record the purchase of the rights and the ARO:

January 1, 2019

Extraction rights	**15,000,000**	
Cash		**15,000,000**
Extraction rights	**1,361,160**	
Asset retirement obligation		**1,361,160**

5 N; 8% I; $2,000,000 FV; PV => 1,361,160
Note: N = 6 is also acceptable.

b) To depreciate the extraction rights over 5 years and also record interest (accretion) expense on the obligation.

December 31, 2019

Depreciation expense	**3,272,232**	
(($15,000,000 + $1,361,160) ÷ 5)		
Accumulated depreciation		**3,272,232**
Interest expense**	**108,893**	
($1,361,160 x 8%)		
Asset retirement obligation		**108,893**

**** If the company were using ASPE, the debit is to Accretion Expense**

Statement of financial position amounts at December 31, 2019:

Account	Amount	Classification
Extraction rights net of accumulated depreciation	**$13,088,928***	**Long-term assets**
Asset retirement obligation	**$1,470,053****	**Long-term liabilities**

***$15,000,000 + $1,361,160 – $3,272,232 = $13,088,928**
****$1,361,160 + $108,893 = $1,470,053**

QUESTION 2 (continued) (35 marks)

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

PART 4: (8 marks) (continued)

c) For the depreciation of the extraction rights, the journal entry is the same every year.

December 31, 2023

Depreciation expense	3,272,233	
Accumulated depreciation		3,272,233

For the accretion (interest) costs, first you need to find the carrying value of the ARO at January 1, 2023 and then to calculate the expense. Since the carrying value at January 1, 2023 is $1,851,851 [=$2,000,000/(1.08)], the interest expense is 1,851,851 x 8% = 148,149.

Interest expense	148,149	
Asset retirement obligation		148,149

Statement of financial position amounts at December 31, 2023:

Account	Amount	Classification
Extraction rights net of accumulated depreciation	0	
Asset retirement obligation	$2,000,000	Current liabilities

Since by the end of 2023 the liability is due to be discharged within a year, it should be classified as a current liability.

QUESTION 3 (31 marks)
Answer ALL parts to this question. Each part is independent.

PART 1: (10 marks)
On February 1, 2020 BondBeagle Inc. issues $1,500,000 face value bonds. The bond date is February 1, 2020, and the bonds carry a coupon rate of 4% per year, payable semi-annually on February 1 and August 1. The bonds' maturity date is February 1, 2040. Proceeds upon issuance were $1,153,278, and the bonds provide an annual yield of 6%.

BondBeagle Inc. uses the effective interest rate method to amortize any bond premium or discount. On February 1, 2035 BondBeagle Inc. retires 50% ($750,000 face value) of the bonds. BondBeagle Inc.'s accounting year-end is August 31.

Required (you must show all supporting calculations, including an audit trail if using a financial calculator)

Prepare all of the relevant journal entries for these bonds on February 1, 2036.

This "date table' is not required in students' answers. Source: bondbeagle.com

19	**Screen**		
20		August 1, 2034	The closest preceding interest payment date to the retirement date
21		1	Number of months (rounded to the nearest month) between (a) the closest preceding interest payment date to the retirement date and (b) the closest preceding accounting year-end date to the retirement date
22		August 31, 2034	The closest preceding accounting year-end date to the retirement date
23		5	Number of months (rounded to the nearest month) between (a) the closest preceding accounting year-end date to the retirement date and (b) the date of retirement (also an interest payment date)
24	**Retirement**	**February 1, 2035**	**Date of retirement (also an interest payment date)**
25		6	Number of months (rounded to the nearest whole month) between the retirement date and the first interest payment date after the retirement date
26	**R1**	August 1, 2035	The first interest payment date after the retirement date
27		1	Number of months (rounded to the nearest month) between (a) the first interest payment date after the retirement date and (b) the first accounting year-end after the retirement date
28	**R2**	August 31, 2035	The first accounting year-end after the retirement date
29		5	Number of months (rounded to the nearest month) between (a) the first accounting year-end after the retirement date and (b) the second interest payment date after the retirement date
30	**R3**	February 1, 2036	The second interest payment date after the retirement date

The following August 31, 2035 is not required in students' answers.

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
2					
3	August 31, 2035	The first accounting year-end after the retirement date	Dr	Cr	
4	Interest expense		3,458.02		= $691,604 (net bond liability at August 01, 2035) x 3.000000% (semi-annual yield) x 1/6 months
5		Bond discount		958.02	= $3,458 - $2,500
6		Interest payable		2,500.00	= $1,500,000 x (100% - 50.0000% retired) x 1/12 months x 4.0000%
7	To record interest expense incurred on the outstanding (50.0000%) bonds between August 01, 2035 (the first interest payment date after the retirement date) and August 31, 2035. Effective interest rate method.				

August 1, 2035 to February 1, 2040 = nine 6-month interest payment periods.				
PVA, 3%, 9 periods		7.786108922	15,000	116,791.63
PV, 3%, 9th period		0.766416732	750,000	574,812.55
				691,604.18

QUESTION 3 (31 marks)
Answer ALL parts to this question. Each part is independent.

PART 1: (10 marks) (continued)

BondBeagle: Accounting for the Life-Cycle Events of Non-Convertible Bond Liabilities

Reset Recalculate

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
2					
3	February 1, 2036	The second interest payment date after the retirement date	Dr	Cr	
4	Interest expense		17,290.09		= $691,604 (net bond liability at August 02, 2035) x 3.000000% (semi-annual yield) x 5/6 months
5		Bond discount		4,790.09	= $17,290 - $12,500
6		Interest payable		12,500.00	= $1,500,000 x (100% - 50.0000% retired) x 5/12 months x 4.0000%
7	To record interest expense incurred on the outstanding (50.0000%) bonds between August 31, 2035 (the first accounting year-end after the retirement date) and February 01, 2036. Effective interest rate method.				
8					
9					
10					
11	Interest payable		15,000.00		
12		Cash		15,000.00	= $12,500 interest accrued (as appears in the journal entry above) + $2,500 [$2,500 = $1,500,000 x (100% - 50.0000% retired) x 1/12 months x 4.0000% interest accrued at August 31, 2035, the first accounting year-end after the retirement date.]
13	To record bond interest payment				
14	BondBeagle Copyright (c) Brian Conheady. All Rights Reserved.				

August 1, 2035 to February 1, 2040 = nine 6-month interest payment periods.			
PVA, 3%, 9 periods	7.786108922	15,000	116,791.63
PV, 3%, 9th period	0.766416732	750,000	574,812.55
			691,604.18

QUESTION 3 (31 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 2: (10 marks)

On April 1, 2019 BondBeagle Inc. issues $1,000,000 face value bonds. The bond date is February 1, 2019, and the bonds carry a coupon rate of 4% per year, payable semi-annually on February 1 and August 1. The bonds' maturity date is February 1, 2034. Proceeds upon issuance, excluding accrued interest, were $805,369, and the bonds provide an annual yield of 6%.

BondBeagle Inc. uses the effective interest rate method to amortize any bond premium or discount. On September 30, 2023 BondBeagle Inc. retires 20% ($200,000 face value) of the bonds at 97.50%, plus accrued interest. BondBeagle Inc.'s accounting year-end is October 31.

Required (you must show all supporting calculations, including an audit trail if using a financial calculator)

Present all necessary journal entries on September 30, 2023.

This "date table' is not required in students' answers. Source: bondbeagle.com

TABLE 2 RETIREMENT

Screen		
	October 31, 2022	The closest preceding accounting year-end date to the retirement date
	9	Number of months (rounded to the nearest month) between (a) the closest preceding accounting year-end date to the retirement date and (b) the closest preceding interest payment date to the retirement date
	August 1, 2023	The closest preceding interest payment date to the retirement date
	2	Number of months (rounded to the nearest month) between (a) the closest preceding interest payment date to the retirement date and (b) the date of retirement
Retirement	**September 30, 2023**	**Date of retirement**
	1	Number of months (rounded to the nearest whole month) between the retirement date and the first accounting year-end after the retirement date
R1	October 31, 2023	The first accounting year-end after the retirement date
	3	Number of months (rounded to the nearest month) between (a) the first accounting year-end after the retirement date and (b) the first interest payment date after the retirement date
R2	February 1, 2024	The first interest payment date after the retirement date

QUESTION 3 (31 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 2: (10 marks) (continued)

PVA, 21 periods, 3%, $20,000 =	$308,300.48
PV, 21 periods, 3%, $1,000,000 =	537,549.28
Carrying amount at 01 August 2023 =	$845,849.76

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

	B	C	D	E	F
2					
3	Date of retirement September 30, 2023		Dr	Cr	Instructions: Enter your data in the INPUT screen: all other screens are "Output screens".
4	Interest expense		1,691.70		= $845,850 (net bond liability at beginning of August 02, 2023) x 3.000000% (semi-annual yield) x 2/6 months x 20.0000% retired.
5		Bond discount		358.37	= $1,692 - $1,333
6		Interest payable		1,333.33	= $1,000,000 x 20.0000% retired x 2/12 months x 4.0000%
7					
	To record interest expense incurred on 20.0000% of the bonds between August 01, 2023 (the closest preceding interest payment date to the retirement date) and September 30, 2023. Effective interest rate method. [Note: September 30, 2023 is neither an accounting year-end or a bond interest payment anniversary date.]				

12	Loss on retirement	25,471.68		= ($196,333 - $1,333 + $30,472) - ($200,000)
13	Interest payable	1,333.33		= See above journal entry. August 01, 2023 is the closest preceding interest payment date to the date of retirement.
14	Bond payable	200,000.00		= $1,000,000 x 20.0000% retired
15	Bond discount		30,471.68	= [$154,150 (unamortized at beginning of August 02, 2023) x 20.0000% retired - $358 (amortization between August 01, 2023 and September 30, 2023 on the 20.0000% retired)]. August 01, 2023 is the closest preceding interest payment date to the date of retirement.
16				
17	Cash		196,333.33	= $195,000 (=$1,000,000 x 20.0000% x 97.5000%) + $1,333 accrued interest

Use Ctrl+ and Ctrl- to zoom in and out.

To record the retirement at 97.5000% of 15.00 year 4.0000% bonds, issued April 01, 2019, face value $200,000.

QUESTION 3 (31 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 3: (11 marks)

On January 1, 2017 Kildare Limited issued a 5 year 8.00% $900,000 bond payable to Limerick Bank. Interest payment dates are June 30 and December 31 and the bonds were issued to provide a semi-annual yield of 3.00%.

By December 2020 Kildare Limited is in financial difficulties and is about to miss the December 31, 2020 interest payment. Kildare Limited negotiates an arrangement with Limerick Bank whereby Limerick Bank agrees to waive the December 31, 2020 interest payment and to replace, effective December 31, 2020, the above bond with a 5 year $895,690 face value bond bearing 10.00% annual interest, payable semi-annually.

Due to Kildare Limited's precarious situation, lenders would normally seek a semi-annual return of 8.00% on this 'bail-out' financing.

Required (you must show all supporting calculations, including an audit trail when using a financial calculator)

(a) Is this troubled debt restructuring/exchange a *settlement* (substantially different in accordance with IFRS 9.3.3.2 and ASPE 3856.27) or a *modification* (not substantially different in accordance with IFRS 9.3.3.2 and ASPE 3856.27)? Support your answer with all necessary calculations. (5 marks)

(b) Assume this troubled debt restructuring is a *settlement*. Provide any journal entries for the *settlement* on Kildare Limited's books that may be necessary on December 31, 2020. Support your answer with all necessary calculations. (3 marks)

(c) Assume this troubled debt restructuring is a *modification* and that Kildare Limited uses IFRS. Provide any journal entries for the *modification* on Kildare Limited's books that may be necessary on December 31, 2020. Support your answer with all necessary calculations. (3 marks)

(a

Borrower's accounting, in accordance with IFRS 9 and Canadian ASPE 3856, for an exchange of debt instruments with an existing lender.

Reset Recalculate

INPUT | Steps1and2 | Step3_Substantial | Step3_NotSubstantial_ASPE | Step3_NotSubstantial_IFRS | IFRS_9 | ASPE_3856 | IFRIC_Update_March2017 | IRR | Othe

	A	B	C	D	E	F	G
1	Step 1:	Compare the new financing arrangement and the old financial liability using the old financial liability's original effective interest rate.					
2	Step 1(a):	Calculate the PV of the old 5 year bond at December 31, 2020, using the old bond's original 3.00% semi-annual yield:					
3	PV Annuity, 2 semi-annual periods, 3.00%, $36,000:		$36,000	3.00%	2	1.913469696	$68,885
4	PV, 2 semi-annual periods, 3.00%, $900,000:		$900,000	3.00%	2	0.942595909	848,336
5							917,221
6	December 31, 2020 interest payable:						36,000
7	PV of the old financial liability at December 31, 2020, using its 3.00% original effective interest rate:						$953,221
8	The unamortized premium on the old financial liability:						$17,221
9							
10	Step 1(b)	Calculate the PV of the new 5 year financing arrangement at December 31, 2020, using the old bond's original 3.00% semi-annual yield:					
11	PV Annuity, 10 semi-annual periods, 3.00%, $44,785:		$44,784	3.00%	10	8.530202837	$382,021
12	PV, 10 semi-annual periods, 3.00%, $895,690:		$895,690	3.00%	10	0.744093915	666,477
13	PV of the new financing arrangement's cash flows at December 31, 2020, using the old financial liability's 3.00% original effective interest rate:						$1,048,498
14							
15	Step 2:	Apply the '10%' test to determine if the old financial liability and the new financial arrangement differ SUBSTANTIALLY from one another.					
16	Difference ($953,221 - $1,048,498):						$95,277
17	Difference as a percentage of $953,221:						10.00%
18							
19	Conclusion: in accordance with IFRS 9.3.3.2, IFRS 9.B3.3.6, ASPE 3856.27, and ASPE 3856.A52 the old financial liability is not derecognized because the difference as a percentage of $953,221 is less than 10%.						

95277/958221	=	9.995269%	which is less than 10%

QUESTION 3 (31 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 3: (11 marks) (continued)

(b)

95277/958221	=	9.995269%	which is less than 10%

INPUT | Steps1and2 | Step3_Substantial | Step3_NotSubstantial_ASPE | Step3_NotSubstantial_IFRS | IFRS_9 | ASPE_3856 | IFRIC_Update_March2017 | IRR | OtherApp

	A	B	C	D	E	F	G
1	**Step 3: in accordance with both IFRS 9.3.3.2 and ASPE 3856.27: when Step 2's 'difference' is SUBSTANTIAL [i.e., is at least 10% (this type of financial arrangement is called a 'settlement' by some textbooks)] (i) derecognize the old financial liability, (ii) recognize the new financial liability, and (iii) recognize any gain/loss on the transaction. For illustration purposes, we'll PRETEND on this screen that Step 2's 10.00% difference is SUBSTANTIAL.**						
2	**Step 3(a): calculate the PV of the new 5 year financial arrangement at 31/12/2020, using the prevailing 8.00% semi-annual effective interest rate for financial liabilities with similar risk & maturity.**						
3	PV Annuity, 10 semi-annual periods, 8.00%, $44,785:		$44,784	8.00%	10	6.710081399	$300,508
4	PV, 10 semi-annual periods, 8.00%, $895,690:		$895,690	8.00%	10	0.463193488	414,878
5	PV of the new bond:						$715,385
6	Face value of the new 5 year bond:						895,690
7	Therefore, the discount on the (new) bond is:						$180,305
8							
9	**Step 3(b): record the 31/12/2020 journal entry required to (i) derecognize the old financial liability, (ii) recognize a new financial liability, and (iii) recognize any gain/loss on the transaction:**						
10				Dr	Cr		
11	(Old) Bond payable			900,000			
12	(Old) Bond premium			17,221		[=$900,000 - $917,221].	
13	Interest payable (on Old Bond)			36,000			
14	(New) Bond discount			180,305			
15		(New) Bond payable			895,690		
16		Gain on bond restructuring			237,836	[= $953,221 - $715,385].	

(c)

INPUT | Steps1and2 | Step3_Substantial | Step3_NotSubstantial_ASPE | Step3_NotSubstantial_IFRS | IFRS_9 | ASPE_3856 | IFRIC_Update_March2017 | IRR | OtherApp

	A	B	C	D	E	F	G
1	**Step 3, IFRS: in accordance with IFRIC Update March 2017: when Step 2's 'difference' is NOT SUBSTANTIAL [i.e., is less than 10% (this type of financial arrangement is called a 'modification' by some textbooks)] (i) DO NOT derecognize the old financial liability or recognize a new financial liability; (ii) DO recognize any gain/loss by revaluing the old debt to a new present value reflecting the new cash flows discounted at the old debt's original effective interest rate.**						
2	**Step 3(a), IFRS: calculate any gain/loss by revaluing the old debt to a new present value reflecting the new cash flows discounted at the old debt's 3.0% original effective interest rate.**						
3	PV of the new arrangement's cash flows at December 31, 2020, using the old financial liability's 3.00% original effective interest rate:						
4	PV Annuity, 10 semi-annual periods, 3.00%, $44,785:		$44,784	3.00%	10	8.530202837	$382,021
5	PV, 10 semi-annual periods, 3.00%, $895,690:		$895,690	3.00%	10	0.744093915	666,477
6							$1,048,498
7	PV of the old financial liability at December 31, 2020, using its 3.00% original effective interest rate:						953,221
8	Loss, calculated in accordance with IFRIC Update March 2017, on the restructuring [$1,048,498 - $953,221]:						$95,277
9							
10	**Step 3(b), IFRS: record the 31/12/2020 journal entry required to recognize any gain/loss:**						
11				Dr	Cr		
12	Loss on bond restructuring			95,277			
13		Bond Payable			95,277		
14	To recognize the loss, calculated in accordance with IFRIC Update March 2017, on the restructuring.						

The following table is not required in your solution.

16	Step 3(c), IFRS: record the interest expense, using the old debt's 3.0% original effective interest rate during the life of the newly arranged cash flows in the normal fashion:									
17	Beginning of period	Face value of the old debt	Unamortized bond premium	Beginning of period: remeasured amortized cost of old debt	CREDIT: 5.00% interest paid per 6 months	DEBIT: 3.00% interest expense per 6 months	DEBIT: remeasured amortized cost of old debt	End of period: remeasured amortized cost of old debt	End of period	
18	31-Dec-20	895,690	152,808	1,048,498	44,784	31,455	13,330	1,035,169	30-Jun-21	1
19	30-Jun-21	895,690	139,479	1,035,169	44,784	31,055	13,729	1,021,439	31-Dec-21	2
20	31-Dec-21	895,690	125,749	1,021,439	44,784	30,643	14,141	1,007,298	30-Jun-22	3
21	30-Jun-22	895,690	111,608	1,007,298	44,784	30,219	14,566	992,732	31-Dec-22	4
22	31-Dec-22	895,690	97,042	992,732	44,784	29,782	15,003	977,730	30-Jun-23	5
23	30-Jun-23	895,690	82,040	977,730	44,784	29,332	15,453	962,277	31-Dec-23	6
24	31-Dec-23	895,690	66,587	962,277	44,784	28,868	15,916	946,361	30-Jun-24	7
25	30-Jun-24	895,690	50,671	946,361	44,784	28,391	16,394	929,968	31-Dec-24	8
26	31-Dec-24	895,690	34,278	929,968	44,784	27,899	16,885	913,082	30-Jun-25	9
27	30-Jun-25	895,690	17,392	913,082	44,784	27,392	17,392	895,690	31-Dec-25	10

QUESTION 4 (16 marks)

Answer ALL parts to this question. Each part is independent

PART 1: (8 marks)

Presented below is information related to Rhodesia Corporation which uses ASPE:

1. Rhodesia is granted a charter that authorizes issuance of 100,000 no par value preferred shares and an unlimited number of no par value common shares.
2. 20,000 common shares are issued for $45 each to two founder investors who do not intend to trade these shares in the foreseeable future.
3. 10,000 common shares with a market price of $43 each are issued for land with a fair value of $400,000.
4. 3,000 preferred shares are sold for cash at $ 110 per share.
5. Rhodesia issues 100 common shares to its lawyer, an employee of Rhodesia Corporation, for work performed by the lawyer during Rhodesia's first month of existence. At this time, the common shares are selling at $ 60 per share.
6. Rhodesia issues shares on a subscription basis, giving each subscriber the right to purchase 300 common shares at a price of $ 65 per share. Fifty individuals accept the company's offer and agree to pay 40% down and the remainder three months later.
7. The final instalment payment (for the subscriptions) is received and the shares are issued.

Required

Prepare the required general journal entries to record these transactions.

1. No entry necessary.

2.	**Cash (20,000 x $ 45)**	**900,000**	
	Common Shares		**900,000**
3.	**Land**	**400,000**	
	Common Shares*		**400,000**
4.	**Cash (3,000 x $ 110)**	**330,000**	
	Preferred Shares		**330,000**
5.	**Organization Expense (100 x $ 60)**	**6,000**	
	Common Shares		**6,000**
6.	**Subscriptions Receivable (50 x 300 x $ 65)**	**975,000**	
	Common Shares Subscribed		**975,000**
	Cash (40% x $ 975,000)	**390,000**	
	Subscriptions Receivable		**390,000**
7.	**Cash ($ 975,000 – $ 390,000)**	**585,000**	
	Subscriptions Receivable		**585,000**
	Second and final instalment		
	Common Shares Subscribed	**975,000**	
	Common Shares		**975,000**

***Rhodesia's shares are not actively traded; hence measure the transaction at the fair value of the non-cash asset acquired.**
See bomode.telfer.uottawa.ca/shareissuance/ShareIssuance_Sheet.aspx**:**

ASPE 3870.11: ***"...fair value of the equity instruments is used to measure a transaction when tradable equity instruments are granted to purchase goods .... When non-tradable equity instruments are granted, the fair value of the goods ... received or of the equity instruments is used, depending on which is more reliably measurable." Net of share issuance costs."***

QUESTION 4 (16 marks) (continued)

Answer ALL parts to this question. Each part is independent

PART 2: (8 marks) (you must show all supporting calculations, including an audit trail if using a financial calculator)

Pudung Inc. has the following shares outstanding:

40,000, $0.80, no par value preferred shares	$400,000
60,000 no par value common shares	$600,000

All shares were sold for $10 each.
No dividends have been declared since December 31, 2016. It is now December 31, 2019, and the board of directors wants to distribute $204,000 in dividends.

Required

Calculate how much the preferred and common shareholders will receive under each of the following assumptions:

a) The preferred is cumulative and fully participating.
b) The preferred is cumulative and participating to 12% total.

a)

	Preferred	Common	Total
Dividends in arrears, $.80 × 40,000 x 2	$ 64,000	$ —	$ 64,000
Current year's dividend*	32,000	48,000	80,000
Participating dividend [2:3 allocation]**	24,000	36,000	60,000
	$120,000	$84,000	$204,000

b)

	Preferred	Common	Total
Dividends in arrears, $.80 × 40,000 x 2	$ 64,000	$ —	$ 64,000
Current year's dividend*	32,000	48,000	80,000
*Participating dividend (additional 4% – max)	16,000	24,000	40,000
Remainder to common	—	20,000	20,000
	$112,000	$92,000	$204,000

*** basic preferred dividend is $.80 ÷ $100 = 8%**

****2:3 allocation is derived from $400,000:$600,000.**

QUESTION 5 (3 marks) Bonus marks question

(you must show all supporting calculations, including an audit trail if using a financial calculator)

At the beginning of year 1 Tianjin Limited issued a $10,000 note in exchange for professional services it received. The note bears a 2.00% annual rate of interest and will be repaid at the end of year 2. The interest is paid annually on December 31. Tianjin Limited has assessed this note and prevailing interest rates and has decided that it will use -1.00% [a negative yield!] when valuing the note. Tianjin uses the effective interest rate amortization method.

Required

a) Prepare Tianjin Limited's journal entry to record the issuance of this note payable.
b) Prepare Tianjin Limited's journal entries at the end of years 1 and 2.

QUESTION 5 (3 marks) Bonus marks question (continued)

(you must show all supporting calculations, including an audit trail if using a financial calculator)

Accounting for Notes Receivable & Payable
[using the amortized cost model]

Reset Recalculate

NoteReceivable | NotePayable | OtherLearningApplications

Accounting for a Notes Payable using the amortized cost measurement model.

Face value (sometimes called 'maturity value') of the note.	$10,000
Number of years from issuance to the note's maturity date.	2
Stated rate (sometimes called 'coupon rate' or 'nominal rate').	2.00%
Market rate (sometimes called 'yield', 'required rate of return', 'discount rate', 'effective rate', or 'valuation rate').	-1.00%
Amortization method.	Effective interest rate

INSTRUCTIONS

1) Delete the default data in the yellow-shaded cells and enter your own data.

2) Then click RECALCULATE on the toolbar at the top of the screen to update all values and explanations on this screen.

3) The answers to REQUIRED are presented in the rows below.

At the beginning of year-1 Tianjin Limited issued a $10,000 note in exchange for professional services it received. The note bears a 2.00% annual rate of interest and will be repaid at the end of year-2. The interest is paid annually on December 31. Tianjin Limited has assessed this note and prevailing interest rates and has decided that it will use -1.00% [a negative yield!] when valuing the note. Tianjin uses the effective interest rate amortization method.

REQUIRED
(1) Prepare Tianjin Limited's journal entry to record the issuance of this note payable.
(2) Prepare Tianjin Limited's amortization table for this note payable.
(3) Prepare Tianjin Limited's journal entries at the end of years 1 and 2.

Part (1): First, calculate the present value of the note payable.	
Yearly interest payment = $10,000 x 2.00%	$200
Present Value Interest Factor (PVIF), using -1.00%, of the interest annuity.	2.030405
PVIF, using -1.00%, of the maturity value (sometimes called 'face value').	1.020304
PV of interest [= $200.00 x 2.030405]	$406.08
PV of maturity value (sometimes called 'face value') [= $10,000 x 1.020304]	10,203.04
PV of the expected cash outflows on the note	$10,609.12
Premium on the note payable [= $10,609.12 - $10,000.00]	$609.12

Part (1): Second, prepare the journal entry to record the issuance of the note payable.			
		Debit	Credit
Professional Services Expense		$10,609.12	
	Notes Payable		$10,609.12

The following amortization table is not required in your solution.

Part (2)

Year	Amortized cost [unamortized carrying amount] of the note at the BOY**	Unamortized premium on the note payable at the BOY	Credit: Cash account (E = $10,000 x 2.00%)	Credit: Interest Income account (F = C x -1.00%)	Debit: Notes Payable account [this equals the annual amortization of the $609.12 premium on the Notes Payable] (G = E + F)	Unamortized premium on the note payable at the EOY** (H = D - G)	Amortized cost [unamortized carrying amount] of the note at the EOY (I = C - G)
1	$10,609.12	$609.12	$200.00	$106.09	$306.09	$303.03	$10,303.03
2	$10,303.03	$303.03	$200.00	$103.03	$303.03	$0.00	$10,000.00
3	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
4	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
7	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
8	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
9	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
10	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
TOTALS			$400.00	$209.12	$609.12		

** BOY = beginning of the year; EOY = end of the year.

Part (3)	Debit	Credit
31/12/Year-1		
Notes Payable	306.09	
Cash		200.00
Interest Income		106.09
31/12/Year-2		
Notes Payable	303.03	
Cash		200.00
Interest Income		103.03
Notes Payable	10,000.00	
Cash		10,000.00

Source: bomode.telfer.uottawa.ca/notesrecpay/NotePayable_Sheet.aspx

Financial Tables

Table 2: PRESENT VALUE of $1.00 that is received in the future.

Period /Percent	-2%	-1%	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.0204082	1.0101010	1.0000000	0.9900990	0.9803922	0.9708738	0.9615385	0.9523810	0.9433962	0.9345794	0.9259259	0.9174312	0.9090909
2	1.0412328	1.0203041	1.0000000	0.9802960	0.9611688	0.9425959	0.9245562	0.9070295	0.8899964	0.8734387	0.8573388	0.8416800	0.8264463
3	1.0624825	1.0306102	1.0000000	0.9705901	0.9423223	0.9151417	0.8889964	0.8638376	0.8396193	0.8162979	0.7938322	0.7721835	0.7513148
4	1.0841658	1.0410204	1.0000000	0.9609803	0.9238454	0.8884870	0.8548042	0.8227025	0.7920937	0.7628952	0.7350299	0.7084252	0.6830135
5	1.1062916	1.0515357	1.0000000	0.9514657	0.9057308	0.8626088	0.8219271	0.7835262	0.7472582	0.7129862	0.6805832	0.6499314	0.6209213
6	1.1288690	1.0621573	1.0000000	0.9420452	0.8879714	0.8374843	0.7903145	0.7462154	0.7049605	0.6663422	0.6301696	0.5962673	0.5644739
7	1.1519071	1.0728861	1.0000000	0.9327181	0.8705602	0.8130915	0.7599178	0.7106813	0.6650571	0.6227497	0.5834904	0.5470342	0.5131581
8	1.1754154	1.0837234	1.0000000	0.9234832	0.8534904	0.7894092	0.7306902	0.6768394	0.6274124	0.5820091	0.5402689	0.5018663	0.4665074
9	1.1994035	1.0946701	1.0000000	0.9143398	0.8367553	0.7664167	0.7025867	0.6446089	0.5918985	0.5439337	0.5002490	0.4604278	0.4240976
10	1.2238811	1.1057274	1.0000000	0.9052870	0.8203483	0.7440939	0.6755642	0.6139133	0.5583948	0.5083493	0.4631935	0.4224108	0.3855433
11	1.2488583	1.1168963	1.0000000	0.8963237	0.8042630	0.7224213	0.6495809	0.5846793	0.5267875	0.4750928	0.4288829	0.3875329	0.3504939
12	1.2743452	1.1281781	1.0000000	0.8874492	0.7884932	0.7013799	0.6245970	0.5568374	0.4969694	0.4440120	0.3971138	0.3555347	0.3186308
13	1.3003523	1.1395738	1.0000000	0.8786626	0.7730325	0.6809513	0.6005741	0.5303214	0.4688390	0.4149644	0.3676979	0.3261786	0.2896644
14	1.3268901	1.1510847	1.0000000	0.8699630	0.7578750	0.6611178	0.5774751	0.5050680	0.4423010	0.3878172	0.3404610	0.2992465	0.2633313
15	1.3539694	1.1627118	1.0000000	0.8613495	0.7430147	0.6418619	0.5552645	0.4810171	0.4172651	0.3624460	0.3152417	0.2745380	0.2393920
16	1.3816015	1.1744564	1.0000000	0.8528213	0.7284458	0.6231669	0.5339082	0.4581115	0.3936463	0.3387346	0.2918905	0.2518698	0.2176291
17	1.4097974	1.1863196	1.0000000	0.8443775	0.7141626	0.6050164	0.5133732	0.4362967	0.3713644	0.3165744	0.2702690	0.2310732	0.1978447
18	1.4385688	1.1983026	1.0000000	0.8360173	0.7001594	0.5873946	0.4936281	0.4155207	0.3503438	0.2958639	0.2502490	0.2119937	0.1798588
19	1.4679273	1.2104067	1.0000000	0.8277399	0.6864308	0.5702860	0.4746424	0.3957340	0.3305130	0.2765083	0.2317121	0.1944897	0.1635080
20	1.4978850	1.2226330	1.0000000	0.8195445	0.6729713	0.5536758	0.4563869	0.3768895	0.3118047	0.2584190	0.2145482	0.1784309	0.1486436
21	1.5284541	1.2349828	1.0000000	0.8114302	0.6597758	0.5375493	0.4388336	0.3589424	0.2941554	0.2415131	0.1986557	0.1636981	0.1351306
22	1.5596471	1.2474574	1.0000000	0.8033962	0.6468390	0.5218925	0.4219554	0.3418499	0.2775051	0.2257132	0.1839405	0.1501817	0.1228460
23	1.5914766	1.2600580	1.0000000	0.7954418	0.6341559	0.5066917	0.4057263	0.3255713	0.2617973	0.2109469	0.1703153	0.1377814	0.1116782
24	1.6239557	1.2727858	1.0000000	0.7875661	0.6217215	0.4919337	0.3901215	0.3100679	0.2469785	0.1971466	0.1576993	0.1264049	0.1015256
25	1.6570977	1.2856422	1.0000000	0.7797684	0.6095309	0.4776056	0.3751168	0.2953028	0.2329986	0.1842492	0.1460179	0.1159678	0.0922960
26	1.6909160	1.2986285	1.0000000	0.7720480	0.5975793	0.4636947	0.3606892	0.2812407	0.2198100	0.1721955	0.1352018	0.1063925	0.0839055
27	1.7254245	1.3117460	1.0000000	0.7644039	0.5858620	0.4501891	0.3468166	0.2678483	0.2073680	0.1609304	0.1251868	0.0976078	0.0762777
28	1.7606372	1.3249960	1.0000000	0.7568356	0.5743746	0.4370768	0.3334775	0.2550936	0.1956301	0.1504022	0.1159137	0.0895484	0.0693433
29	1.7965686	1.3383797	1.0000000	0.7493421	0.5631123	0.4243464	0.3206514	0.2429463	0.1845567	0.1405628	0.1073275	0.0821545	0.0630394
30	1.8332333	1.3518987	1.0000000	0.7419229	0.5520709	0.4119868	0.3083187	0.2313774	0.1741101	0.1313671	0.0993773	0.0753711	0.0573086
31	1.8706462	1.3655543	1.0000000	0.7345771	0.5412460	0.3999871	0.2964603	0.2203595	0.1642548	0.1227730	0.0920160	0.0691478	0.0520987
32	1.9088226	1.3793478	1.0000000	0.7273041	0.5306333	0.3883370	0.2850579	0.2098662	0.1549574	0.1147411	0.0852000	0.0634384	0.0473624
33	1.9477782	1.3932806	1.0000000	0.7201031	0.5202287	0.3770262	0.2740942	0.1998725	0.1461862	0.1072347	0.0788889	0.0582003	0.0430568
34	1.9875288	1.4073541	1.0000000	0.7129733	0.5100282	0.3660449	0.2635521	0.1903548	0.1379115	0.1002193	0.0730453	0.0533948	0.0391425
35	2.0280906	1.4215698	1.0000000	0.7059142	0.5000276	0.3553834	0.2534155	0.1812903	0.1301052	0.0936629	0.0676345	0.0489861	0.0355841
36	2.0694802	1.4359291	1.0000000	0.6989249	0.4902232	0.3450324	0.2436687	0.1726574	0.1227408	0.0875355	0.0626246	0.0449413	0.0323492
37	2.1117145	1.4504334	1.0000000	0.6920049	0.4806109	0.3349829	0.2342968	0.1644356	0.1157932	0.0818088	0.0579857	0.0412306	0.0294083
38	2.1548107	1.4650843	1.0000000	0.6851534	0.4711872	0.3252262	0.2252854	0.1566054	0.1092389	0.0764569	0.0536905	0.0378262	0.0267349
39	2.1987864	1.4798831	1.0000000	0.6783697	0.4619482	0.3157535	0.2166206	0.1491480	0.1030555	0.0714550	0.0497134	0.0347030	0.0243044
40	2.2436596	1.4948314	1.0000000	0.6716531	0.4528904	0.3065568	0.2082890	0.1420457	0.0972222	0.0667804	0.0460309	0.0318376	0.0220949

Table 4: PRESENT VALUE of Annuity of $1.00 in arrears.

Period/Percent	-2%	-1%	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.020408	1.010101	1.000000	0.990099	0.980392	0.970874	0.961538	0.952381	0.943396	0.934579	0.925926	0.917431	0.909091
2	2.061641	2.030405	2.000000	1.970395	1.941561	1.913470	1.886095	1.859410	1.833393	1.808018	1.783265	1.759111	1.735537
3	3.124123	3.061015	3.000000	2.940985	2.883883	2.828611	2.775091	2.723248	2.673012	2.624316	2.577097	2.531295	2.486852
4	4.208289	4.102036	4.000000	3.901966	3.807729	3.717098	3.629895	3.545951	3.465106	3.387211	3.312127	3.239720	3.169865
5	5.314581	5.153571	5.000000	4.853431	4.713460	4.579707	4.451822	4.329477	4.212364	4.100197	3.992710	3.889651	3.790787
6	6.443450	6.215729	6.000000	5.795476	5.601431	5.417191	5.242137	5.075692	4.917324	4.766540	4.622880	4.485919	4.355261
7	7.595357	7.288615	7.000000	6.728195	6.471991	6.230283	6.002055	5.786373	5.582381	5.389289	5.206370	5.032953	4.868419
8	8.770772	8.372338	8.000000	7.651678	7.325481	7.019692	6.732745	6.463213	6.209794	5.971299	5.746639	5.534819	5.334926
9	9.970176	9.467008	9.000000	8.566018	8.162237	7.786109	7.435332	7.107822	6.801692	6.515232	6.246888	5.995247	5.759024
10	11.194057	10.572736	10.000000	9.471305	8.982585	8.530203	8.110896	7.721735	7.360087	7.023582	6.710081	6.417658	6.144567
11	12.442915	11.689632	11.000000	10.367628	9.786848	9.252624	8.760477	8.306414	7.886875	7.498674	7.138964	6.805191	6.495061
12	13.717261	12.817810	12.000000	11.255077	10.575341	9.954004	9.385074	8.863252	8.383844	7.942686	7.536078	7.160725	6.813692
13	15.017613	13.957384	13.000000	12.133740	11.348374	10.634955	9.985648	9.393573	8.852683	8.357651	7.903776	7.486904	7.103356
14	16.344503	15.108468	14.000000	13.003703	12.106249	11.296073	10.563123	9.898641	9.294984	8.745468	8.244237	7.786150	7.366687
15	17.698472	16.271180	15.000000	13.865053	12.849264	11.937935	11.118387	10.379658	9.712249	9.107914	8.559479	8.060688	7.606080
16	19.080074	17.445637	16.000000	14.717874	13.577709	12.561102	11.652296	10.837770	10.105895	9.446649	8.851369	8.312558	7.823709
17	20.489871	18.631956	17.000000	15.562251	14.291872	13.166118	12.165669	11.274066	10.477260	9.763223	9.121638	8.543631	8.021553
18	21.928440	19.830259	18.000000	16.398269	14.992031	13.753513	12.659297	11.689587	10.827603	10.059087	9.371887	8.755625	8.201412
19	23.396367	21.040665	19.000000	17.226008	15.678462	14.323799	13.133939	12.085321	11.158116	10.335595	9.603599	8.950115	8.364920
20	24.894252	22.263298	20.000000	18.045553	16.351433	14.877475	13.590326	12.462210	11.469921	10.594014	9.818147	9.128546	8.513564
21	26.422707	23.498281	21.000000	18.856983	17.011209	15.415024	14.029160	12.821153	11.764077	10.835527	10.016803	9.292244	8.648694
22	27.982354	24.745739	22.000000	19.660379	17.658048	15.936917	14.451115	13.163003	12.041582	11.061240	10.200744	9.442425	8.771540
23	29.573830	26.005797	23.000000	20.455821	18.292204	16.443608	14.856842	13.488574	12.303379	11.272187	10.371059	9.580207	8.883218
24	31.197786	27.278582	24.000000	21.243387	18.913926	16.935542	15.246963	13.798642	12.550358	11.469334	10.528758	9.706612	8.984744
25	32.854884	28.564225	25.000000	22.023156	19.523456	17.413148	15.622080	14.093945	12.783356	11.653583	10.674776	9.822580	9.077040
26	34.545800	29.862853	26.000000	22.795204	20.121036	17.876842	15.982769	14.375185	13.003166	11.825779	10.809978	9.928972	9.160945
27	36.271224	31.174599	27.000000	23.559608	20.706898	18.327031	16.329586	14.643034	13.210534	11.986709	10.935165	10.026580	9.237223
28	38.031861	32.499595	28.000000	24.316443	21.281272	18.764108	16.663063	14.898127	13.406164	12.137111	11.051078	10.116128	9.306567
29	39.828430	33.837975	29.000000	25.065785	21.844385	19.188455	16.983715	15.141074	13.590721	12.277674	11.158406	10.198283	9.369606
30	41.661663	35.189874	30.000000	25.807708	22.396456	19.600441	17.292033	15.372451	13.764831	12.409041	11.257783	10.273654	9.426914
31	43.532309	36.555428	31.000000	26.542285	22.937702	20.000428	17.588494	15.592811	13.929086	12.531814	11.349799	10.342802	9.479013
32	45.441132	37.934776	32.000000	27.269589	23.468335	20.388766	17.873551	15.802677	14.084043	12.646555	11.434999	10.406240	9.526376
33	47.388910	39.328056	33.000000	27.989693	23.988564	20.765792	18.147646	16.002549	14.230230	12.753790	11.513888	10.464441	9.569432
34	49.376439	40.735410	34.000000	28.702666	24.498592	21.131837	18.411198	16.192904	14.368141	12.854009	11.586934	10.517835	9.608575
35	51.404530	42.156980	35.000000	29.408580	24.998619	21.487220	18.664613	16.374194	14.498246	12.947672	11.654568	10.566821	9.644159
36	53.474010	43.592909	36.000000	30.107505	25.488842	21.832252	18.908282	16.546852	14.620987	13.035208	11.717193	10.611763	9.676508
37	55.585724	45.043343	37.000000	30.799510	25.969453	22.167235	19.142579	16.711287	14.736780	13.117017	11.775179	10.652993	9.705917
38	57.740535	46.508427	38.000000	31.484663	26.440641	22.492462	19.367864	16.867893	14.846019	13.193473	11.828869	10.690820	9.732651
39	59.939321	47.988310	39.000000	32.163033	26.902589	22.808215	19.584485	17.017041	14.949075	13.264928	11.878582	10.725523	9.756956
40	62.182981	49.483141	40.000000	32.834686	27.355479	23.114772	19.792774	17.159086	15.046297	13.331709	11.924613	10.757360	9.779051

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