Exam RETDAC

Design & Accounting Exam – Canada

Date: Friday, October 27, 2023

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 11 questions numbered 1 through 11 with a total of 80 points.

   The points for each question are indicated at the beginning of the question. Question 4 pertains to the Case Study.

2. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions provided in this document.

Written-Answer Instructions

1. Each question part or subpart should be answered either in the Word document or the Excel file as directed. Graders will only look at work in the indicated file.

   a) In the Word document, answers should be entered in the box marked ANSWER. The box will expand as lines of text are added. There is no need to use special characters or subscripts (though they may be used). For example, β_1 can be typed as beta_1 (and ^ used to indicate a superscript).

   b) In the Excel document formulas should be entered. Performing calculations on scratch paper or with a calculator and then entering the answer in the cell will not earn full credit. Formatting of cells or rounding is not required for credit.

   c) Individual exams may provide additional directions that apply throughout the exam or to individual items.

2. The answer should be confined to the question as set.

3. Prior to uploading your Word and Excel files, each file should be saved and renamed with your five-digit candidate number in the filename.

4. The Word and Excel files that contain your answers must be uploaded before time expires.

Navigation Instructions

Open the Navigation Pane to jump to questions.

Press Ctrl+F, or click View > Navigation Pane:
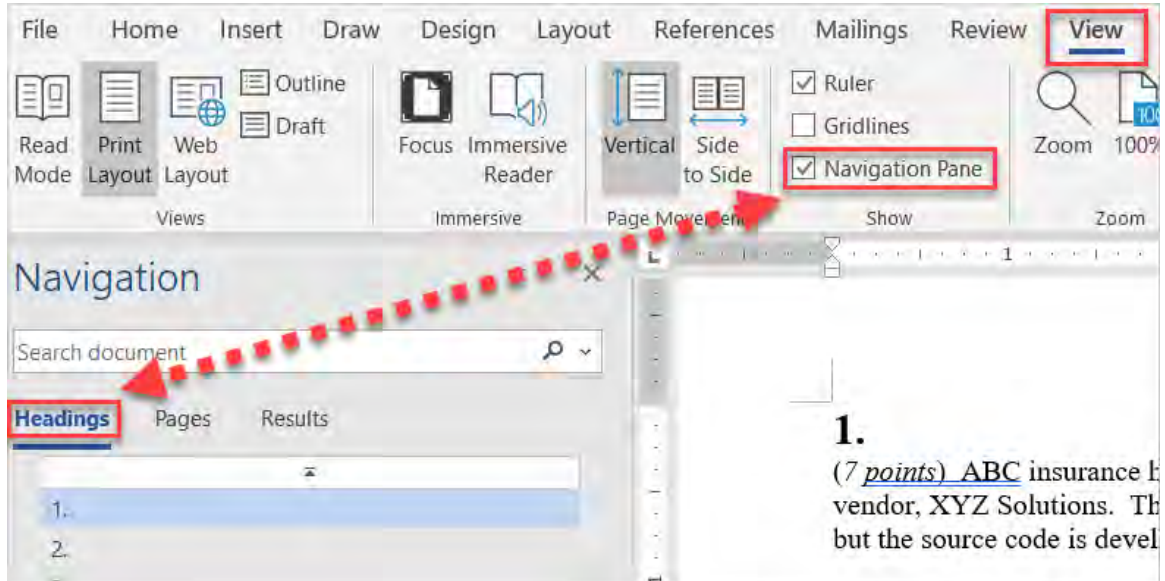
GENERAL INSTRUCTIONS

- All questions indicate whether the response is to be answered in Word or Excel. Only the Word document will be graded for parts of a question with Word answer boxes; only the Excel spreadsheet will be graded for parts of a question with Excel instructions.
- When answering in Excel, "show your work" means
    - Calculation formulas must be used in the answer cells containing the work.
    - All work should be labeled.
- When answering in Excel:
    - Formatting and rounding is not required for credit.
    - Best practice is to write out the formulas in words, which demonstrates understanding and may result in earning partial credit.

CASE STUDY INSTRUCTIONS

The case study will be used as a basis for some examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular plan design to a company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.

1.

(*7 points*)

(a) (*4 points*) Describe the differences in risks faced by the plan participants of a traditional defined benefit pension plan to the risks faced by plan participants in the following types of plans:

    (i)   Traditional defined contribution pension plans

    (ii)   Flexible pension plans

    (iii)   Variable annuity plans

    (iv)   Target benefit plans

> ANSWER:

Company ABC sponsors a traditional defined benefit pension plan with the following design features:

Benefit accrual	$50 per month per year of service
Indexing	None
Early retirement reduction	Actuarial equivalence from normal retirement age based on market interest rates

(b) (*3 points*) Recommend three risk sharing plan design features that can help mitigate economic risks faced by Company ABC's plan participants.

> ANSWER:

2.

(*8 points*) Company ABC sponsors a post-employment health plan and a defined benefit pension plan. Members may retire under the post-employment health plan upon attaining age 55 and 5 years of service.

The following assumptions are used for the pension plan accounting valuation.

Discount Rate	4.50%
Retirement	Age 65
Termination	Liability-weighted age-based table
Disability	None
Mortality	1994 Uninsured Pensioner Mortality Table (UP-94) with static projection to 2024 using Scale AA

(a) (*4 points*) Critique the use of the assumptions noted above for the post-employment health plan valuation.

ANSWER:

Retired members of the post-employment health plan are required to contribute to the plan.

(b) (*2 points*) Describe considerations when setting the following assumptions for the post-employment health plan valuation:

(i) Health care trend rate

(ii) Plan participation rate

ANSWER:

(c) (*2 points*) Describe how the following can affect the projected net per-capita health care claims costs:

(i) Fixed co-pay

(ii) Lifetime maximum

ANSWER:

3.

(*4 points*) Company A and Company B sponsor defined contribution (DC) pension plans. The two companies have merged.

You are given the following:

	Company A	**Company B**	**Proposed Plan Provisions for the Merged Company**
Member contributions	3% to 7% of base salary	Not allowed	4% to 6% of base salary
Company contributions	X% of member contributions based on points (age plus service): 30 points – 50% 40 points – 75% 50 points – 100%	3.75% of base salary	75% of member contributions
Administrative expenses	Paid by Company A	0.25% of member account balance per year paid by members	0.25% of member account balance per year paid by members
Eligibility	Two years of service	Immediate	Two years of service

(a)   (*3 points*) Assess the proposed plan provisions in respect of adverse amendments under *CAPSA Guideline No 8: Defined Contribution Plans*.

ANSWER:

The merged company is replacing an existing investment option in the DC Plan.

(b)   (*1 point*) List what should be included in the notice to plan members to comply with *CAPSA Guideline No. 3: Capital Accumulation Plans*.

ANSWER:

4.

(*9 points*) NOC is considering offering an early retirement incentive program (ERIP) with the following features:

- All vested active employees over age 55 are eligible
- Retirement benefit is unreduced
- Best average earnings are based on earnings in the 12 consecutive months prior to retirement

(a)   (*4 points*) Evaluate the potential effects of the ERIP on NOC.

ANSWER:

(b)   (*3 points*) Describe steps NOC should take to implement the ERIP.

ANSWER:

One year after the ERIP, NOC's actuary is conducting an experience study.

(c)   (*2 points*) Describe the considerations for setting the retirement assumption.

ANSWER:

5.

(*8 points*) Company ABC wishes to de-risk the retiree portion of its pension liability.

You are provided the following:

Retiree Defined Benefit Obligation (DBO)	December 31, 2022
DBO at 3%	$1,110,000
DBO at 4%	$1,000,000
DBO at 5%	$910,000

(a)   (*2 points*) Calculate the following for the retiree DBO:

   (i)   Effective Duration

   (ii)   Convexity

   Show all work.

   The response for this part is to be provided in the Excel spreadsheet.

Company ABC is considering an annuity buy-out of the retiree portion of its pension liability at December 31, 2022. You are provided the following at December 31, 2022:

Annuity Premium	$990,000
DBO Discount Rate	4.70%

(b)   (*2 points*) Determine the settlement credit/(cost) of the annuity buy-out under International Accounting Standard IAS 19, Rev. 2011 (IAS 19).

   Show all work.

   The response for this part is to be provided in the Excel spreadsheet.

(c)   (*2 points*) Compare and contrast the accounting implications of an annuity buy-out under IAS 19 versus U.S. Accounting Standard ASC 715.

   No calculations required.

   ANSWER:

5. Continued

(d)   (*2 points*) Critique an annuity buy-in as an alternative de-risking strategy.

No calculations required.

ANSWER:

6.

(*8 points*) Company ABC sponsors a defined benefit pension plan with the following plan provisions:

Normal Retirement Benefit	2% of final 3-year average pensionable earnings times years of service
Pensionable Earnings	Base pay plus bonus
Normal Form of Pension	Life annuity with 15-year guarantee
Normal Retirement Age	Age 65
Early Retirement	Age 55, reduced by 3% per year prior to age 65
Unreduced Pension	Age 60 with 10 years of service
Cost of Living Adjustments	100% of CPI

(a) (*4 points*) Assess the risks of these plan provisions from the employer's perspective.

ANSWER:

(b) (*2 points*) Recommend changes to four of the plan provisions to reduce the risks identified in part (a) other than freezing future service or salary accruals.

Justify your response.

ANSWER:

Company ABC has decided to keep the plan provisions unchanged but would like to reduce its risk exposure.

(c) (*2 points*) Describe barriers to de-risking the pension plan through a pension risk transfer to an insurance company.

ANSWER:

7.

(*7 points*)

(a) (5 *points*) Describe considerations for setting the following long-term assumptions for a defined benefit pension plan:

   (i)   Termination

   (ii)   Retirement

   (iii) Disability

   (iv)   Election of optional forms of benefits

   (v)   Salary merit scale

   ANSWER:

(b) (*2 points*) Identify the disclosures required to document demographic assumptions based on Actuarial Standard of Practice No. 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations.

   ANSWER:

8.

(*11 points*) Company ABC sponsors a contributory defined benefit pension plan.

You are given the following information under U.S. Accounting Standard ASC 715 (ASC 715):

	At December 31, 2022	**At December 31, 2023**
Discount rate	2.50%	3.00%
Expected return on assets	5.50%	6.00%
Fair value of assets	$18,500,000	$21,000,000
Projected benefit obligation	$25,000,000	$24,500,000
Total current service cost at January 1, 2023	$900,000	
Expected employer contributions for the following fiscal year	$400,000	
Expected employee contributions for the following fiscal year	$325,000	
Expected benefit payments for the following fiscal year	$500,000	
Expected average remaining service lifetime (EARSL)	11.0	
Average future lifetime of all participants	20.0	
Gain/loss amortization method	The company amortizes gains/losses outside of the 10% corridor	
Unrecognized (gain)/loss in accumulated other comprehensive income (AOCI)	$2,750,000	

Contributions and benefit payments are made uniformly throughout the year.

(a)   (*5 points*) Calculate the following under ASC 715:

(i)   2023 Net Periodic Pension Cost

(ii)   AOCI as of December 31, 2023

Show all work.

> *The response for this part is to be provided in the Excel spreadsheet.*

8. Continued

Company ABC subsequently informed you that they froze the plan effective July 1, 2023 for all its active members.

You are given the following additional information:

	At July 1, 2023
Projected benefit obligation after freeze	$21,500,000
Fair value of assets	$19,750,000
Discount rate	2.50%
Expected return on assets	5.50%

Assume the following:

- Employer and employee contributions are suspended effective July 1, 2023
- No change to expected benefit payments for the year

(b)   (*6 points*) Calculate the 2023 Net Periodic Pension Cost under ASC 715.

Show all work.

The response for this part is to be provided in the Excel spreadsheet.

9.
(*7 points*)

(a)   (*2 points*) Describe the two categories of embedded options in defined benefit pension plans.

> ANSWER:

You are given the following information regarding a single-employer defined benefit pension plan:

- Cost of Living Adjustments (COLAs) provide increases of 100% of the Consumer Price Index (CPI) to retirees in years when the pension fund return exceeds 3%.
- The pension plan has a funded status of 70%.

(b)   (*4 points*) Describe the risks of the COLA provision from the perspectives of the following:

        (i)   The employer

        (ii)   The retirees

> ANSWER:

(c)   (*1 point*) Propose changes to the COLA provision to mitigate the employer risks.

> ANSWER:

10.

(*5 points*) Company ABC is freezing future pay and service accruals for its defined benefit (DB) pension plan effective December 31. The change is announced on September 30.

(a)   (*4 points*) Describe the accounting implications of the freeze under the following:

   (i)   International Accounting Standard IAS 19, Rev. 2011 (IAS 19)

   (ii)   U.S Accounting Standard ASC 715 (ASC 715)

   ANSWER:

As a result of the DB plan freeze, Company ABC experiences high turnover. Vested plan participants have the option to cash out their DB entitlement as part of the plan rules when leaving the company.

(b)   (*1 point*) Explain how to determine whether settlement accounting applies under the following:

   (i)   IAS 19

   (ii)   ASC 715

   ANSWER:

11.

(*6 points*)

(a)   (*3 points*) Compare and contrast the recommended practices for measuring obligations as described in the following:

  (i)   Actuarial Standard of Practice No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions

  (ii)   Actuarial Standard of Practice No. 6, Measuring Retiree Group Benefit Obligations and Determining Retiree Group Benefits Program Periodic Costs or Actuarially Determined Contributions

  ANSWER:

(b)   (*1 point*) Identify the information an actuary should disclose about using third-party actuarial valuation software as described in Actuarial Standard of Practice No. 56, Modeling.

  ANSWER:

An actuary is evaluating the economic assumptions for an upcoming valuation due to a period of high inflation.

(c)   (*2 points*) Describe the considerations when selecting the inflation assumption for the upcoming valuation as described in Actuarial Standard of Practice No. 27, Selection of Economic Assumptions for Measuring Pension Obligations.

  ANSWER:

END OF EXAMINATION