

Exam RETDAC

Design & Accounting Exam – Canada

Date: Friday, October 28, 2022

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 12 questions numbered 1 through 12 with a total of 100 points.

The points for each question are indicated at the beginning of the question. Question 2 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.

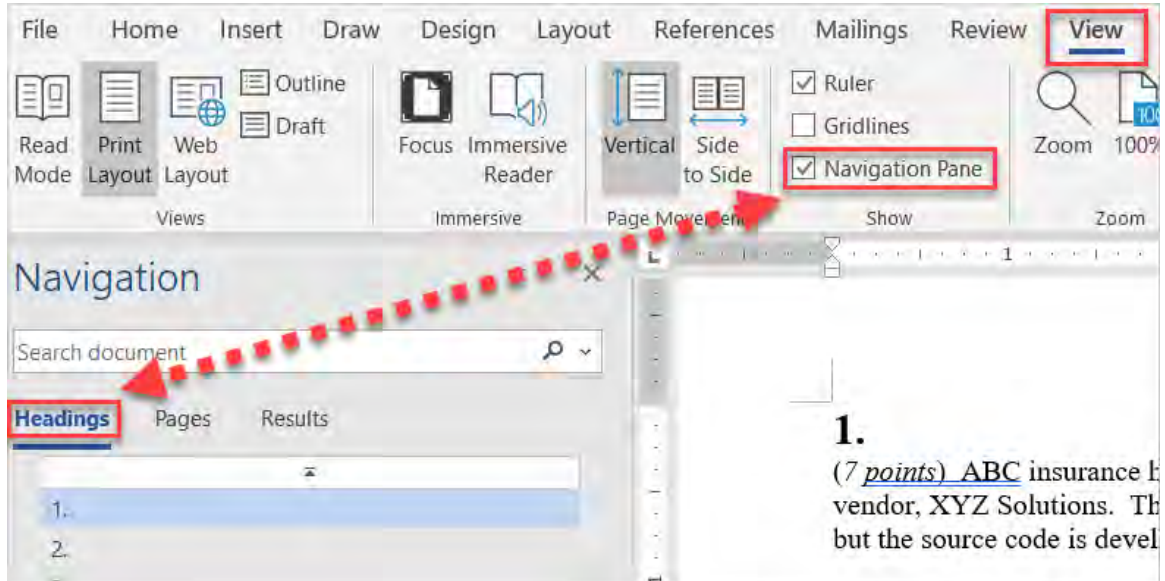
Written-Answer Instructions

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 the five-minute upload period 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.

(8 points)

(a) (3 points) Compare and contrast the single lump sum and partial withdrawal distribution options from a defined contribution plan from the perspective of:

- (i) Plan sponsor
- (ii) Plan participants

ANSWER:

(b) (3 points) Compare and contrast the installment payment program and annuity distribution options from a defined contribution plan from the perspective of:

- (i) Plan sponsor
- (ii) Plan participants

ANSWER:

(c) (2 points) Describe considerations for a plan sponsor's evaluation of defined contribution plan distribution options.

ANSWER:

Question 2 pertains to the Case Study.

2.

(7 points) A pandemic is sweeping through Gevrey with the following characteristics:

- Symptoms of the virus range from mild cold-like symptoms to severe illness and death
- Initial evidence implies some of the afflicted will continue to have long-term medical issues
- The elderly and those with existing respiratory or immune conditions are most vulnerable, but all demographic groups are affected
- Many people are delaying non-emergency medical care
- There is significant economic disruption

(a) (2 points) Describe two ways the pandemic may affect expected trend in future medical costs for the National Oil Retiree Health Benefit Program (RHBP).

ANSWER:

(b) (2 points) Recommend two other RHBP valuation assumptions to consider adjusting due to the pandemic.

Justify your response.

ANSWER:

2. Continued

Due to the pandemic, the following changes have been made to the RHPB effective July 1, 2022:

- Retirees and their spouses are required to pay premiums equal to 30% of per capita claims costs
- The life insurance benefit is reduced by 30% for all participants
- Retirees who elect not to pay the premium do not receive health or life insurance benefits

NOC assumes this plan change will reduce participation rates for current and future retirees to 80%. No other assumption changes or gains and losses have occurred.

- (c) (3 points) Calculate the revised 2022 Defined Benefit Cost under International Accounting Standard IAS 19, Rev. 2011.

Show all work.

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

3.

(9 points) Company ABC is a multinational company with globally mobile employees on work assignments outside of their home country. These assignments fall under the following categories:

- Short Term – Assignment for less than 1 year
- Temporary – Assignment between 1 and 5 years
- Permanent (Global Nomads) – Assignment for more than 5 years

(a) (4 points) Describe the advantages and disadvantages of continuing to participate in the home country pension plan in lieu of the host country plan from the perspective of an employee on the following assignments:

(i) Short Term

(ii) Permanent

ANSWER:

(b) (2 points) Explain the rationale behind establishing an International Pension Plan (IPP) under a Trust.

ANSWER:

(c) (3 points) Critique the option of providing cash in lieu of an IPP for employees on Temporary Assignment from the perspective of the employer.

ANSWER:

4.

(7 points)

- (a) (2 points) Describe how redistributions occur among defined benefit pension plan participants with employee contributions and accrual rates which:
- (i) Do not vary with age
 - (ii) Vary with age

ANSWER:

- (b) (3 points) Describe how the characteristics of the following pension arrangements affect risk sharing between the plan participants and plan sponsor:
- (i) Traditional defined benefit plan
 - (ii) Cash balance plan
 - (iii) Collective defined contribution plan

ANSWER:

- (c) (2 points) List the criteria used to assess the effectiveness of hybrid plans.

ANSWER:

5.

(8 points)

- (a) (2 points) Describe the short-term impact of an upward sloping and downward sloping yield curve on the Net Periodic Pension Cost under U.S. Accounting Standard ASC 715 (ASC 715) using the following:
- (i) Traditional Approach
 - (ii) Spot Rate Approach

No calculations required.

ANSWER:

You have been provided a set of cash flows and spot rates in the Excel spreadsheet for a pension plan with frozen benefit accruals. All cash flows are made at the end of the year.

- (b) (6 points) Calculate the following using both the Traditional and Spot Rate Approaches:
- (i) Projected Benefit Obligation under ASC 715
 - (ii) Interest Cost under ASC 715
 - (iii) Equivalent discount rates that would be disclosed in the ASC 715 report

Show all work.

<i>The response to this part is to be provided in the Excel spreadsheet.</i>
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6.

(9 points)

(a) *(4 points)* Describe how the following SERP plan provisions can be designed to improve executive recruitment and retention:

- (i) Eligibility
- (ii) Vesting
- (iii) Benefit formula
- (iv) Service

ANSWER:

6. Continued

Company ABC has decided to implement a defined contribution (DC) SERP effective January 1, 2023 with the following provisions:

Granted past service contributions are paid in full to the retirement compensation arrangement (RCA) on January 1, 2023	\$250,000
Contribution for current service cost on January 1, 2023	\$25,000
Contribution for current service cost on January 1, 2024	\$30,000

You are given the following executive scenario:

- The plan is fully funded.
- A refundable taxable account (RTA) has been set up for the DC SERP.
- Contributions to the RTA are made at the same time as the above contributions to the RCA.
- The executive's account earns 5% annually.
- Assume all income is realized in the year it is earned.
- The executive retires on December 1, 2024 with an initial withdrawal of \$50,000.
- The executive withdraws \$100,000 on July 1, 2025.
- Account transfers are assumed to occur on December 31 each year.

(b) (4 points) Calculate the January 1, 2026 account balances in the following:

- (i) RCA
- (ii) RTA

Show all work.

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

(c) (1 point) Describe the steps to implement a letter of credit funding arrangement.

ANSWER:

7.

(11 points) Unions representing employees in the same industry participate in a multi-employer pension plan (MEPP) with the following plan provisions:

Provision	Defined Benefit MEPP
Normal Retirement Age	Age 62
Benefit Formula	1.5% of final average earnings (last 60 consecutive months of base earnings) times years of service
Contribution	Employer: \$6 per hour Employee: none
Early Retirement Benefit	Reduced by 0.25% per month when retirement precedes the Normal Retirement Age
Form of Benefit	Life guaranteed for 10 years
Optional Forms of Benefit	Lump sum
Post-Retirement Indexing	Benefits indexed at 2/3 inflation

- (a) (4 points) Compare and contrast the plan provisions to those of a traditional MEPP.

ANSWER:

The Board of Trustees would like to reduce risk and volatility by aligning the plan provisions with a traditional MEPP.

- (b) (3 points) Recommend four changes to the plan provisions to meet the Board's objectives.

Justify your response.

ANSWER:

- (c) (4 points) Propose four plausible adverse scenarios to measure risks inherent in MEPPs under a going concern valuation.

Justify your response.

ANSWER:

8.

(8 points)

- (a) (3 points) Describe the following types of pension plans for government employees that combine elements of defined contribution and defined benefit plans:
- (i) Vertical Hybrid
 - (ii) Horizontal Hybrid
 - (iii) Choice Scheme

ANSWER:

You are given the following information for a non-contributory pension plan with immediate eligibility that offers the following three options:

Option	Formula
Defined benefit (DB)	Career average pension of 1% of income for each year of service payable at age 65
Defined contribution (DC)	Accumulated contributions of 8% of salary per year
Hybrid	Career average pension of 0.5% of income for each year of service payable at age 65 plus accumulated contributions of 5% of salary per year before age 50 and 2% thereafter

You are provided with the following assumptions:

Annual investment rate of return	4%
Annual salary increase rate	1%
Annual accrual and contribution limits	None
Annuity factor at age 65	14.0
Pre-retirement mortality for hybrid and DB	None
Timing of hybrid and DC contributions	End of year

- (b) (5 points) Assess which option is the most advantageous for a new hire age 45 based on the assumptions provided.

Show all work and justify your response.

<i>The response to this part is to be provided in the Excel spreadsheet.</i>
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9.

(8 points) Company ABC sponsors a defined benefit plan for its hourly union population and a defined benefit plan for its salaried non-union population. Company ABC is considering merging the two plans.

- (a) (3 points) Describe three advantages and three disadvantages of merging the two plans from the perspective of Company ABC

ANSWER:

The Hourly Pension Plan and Salaried Pension Plan are legally merged effective December 31, 2022.

You are given the following:

	Hourly Pension Plan	Salaried Pension Plan
January 1, 2023 Information		
Defined Benefit Obligation	\$1,100,000	\$3,000,000
Fair Value of Assets	\$1,400,000	\$2,850,000
Service Cost	\$125,000	\$360,000
Expected 2023 Benefit Payments	\$160,000	\$275,000
Expected 2023 Contributions	\$50,000	\$0
Discount Rate	2.60%	
Timing of Benefit Payments	Mid-Year	Mid-Year
Timing of Contributions	Mid-Year	Mid-Year

- (b) (2 points) Calculate the 2023 Defined Benefit Cost under International Accounting Standard IAS 19, Rev. 2011 (IAS 19) for the merged plan.

<i>The response to this part is to be provided in the Excel spreadsheet.</i>
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9. Continued

Effective March 31, 2023, Company ABC purchases an annuity buy-out for the retirees in the merged plan.

You are given the following:

	March 31, 2023
Defined Benefit Obligation prior to annuity buy-out	\$4,250,000
Fair Value of Assets prior to annuity buy-out	\$4,300,000
Retiree Only Defined Benefit Obligation	\$800,000
Retiree Annuity Purchase Premium	\$875,000
Additional Information	
Service Cost (annualized)	\$505,000
Expected 2023 Contributions	\$0
Discount Rate	2.35%
There are no other gains or losses as of March 31, 2023.	

- (c) (3 points) Calculate the revised 2023 Defined Benefit Cost under IAS 19 reflecting the annuity buy-out.

Show all work.

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

10.

(7 points)

- (a) (2 points) Describe the risk-sharing features of Association of Canadian Pension Management Target Benefit Plan concept (TBP).

ANSWER:

- (b) (2 points) Describe the shortcomings of traditional defined contribution plans and traditional defined benefit plans when compared to TBP.

ANSWER:

- (c) (3 points) Explain how the different components of mortality risk are shared between plan participants and the plan sponsor in the following:

- (i) Traditional defined contribution plans
- (ii) Traditional defined benefit plans
- (iii) TBP

ANSWER:

11.

(9 points) An administrator of a defined contribution pension plan has chosen to follow the guidance provided by the Canadian Association of Pension Supervisory Authorities (CAPSA).

- (a) (5 points) Describe information the administrator should provide in the following situations:
- (i) Member who decides to retire
 - (ii) Removal of an investment option
 - (iii) Replacement of an investment option

ANSWER:

- (b) (4 points) Identify information the administrator should provide to members for a variable benefit retirement option that pays income directly from the plan.

ANSWER:

12.

(9 points)

- (a) (3 points) Describe considerations when determining if a model meets its intended purpose under Actuarial Standard of Practice No. 56, Modeling (ASOP 56).

ANSWER:

- (b) (3 points) Identify the guidance for setting assumptions for models under ASOP 56.

ANSWER:

- (c) (3 points) Describe how an actuary can mitigate model risk under ASOP 56.

ANSWER:

****END OF EXAMINATION****