

Exam RETDAU

MORNING SESSION

Date: Thursday, May 2, 2019

Time: 8:30 a.m. – 11:45 a.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has a total of 100 points. It consists of a morning session (worth 60 points) and an afternoon session (worth 40 points).
 - a) The morning session consists of 8 questions numbered 1 through 8.
 - b) The afternoon session consists of 5 questions numbered 9 through 13.

The points for each question are indicated at the beginning of the question. Question 7 pertains to the Case Study, which is enclosed inside the front cover of this exam booklet.

2. Failure to stop writing after time is called will result in the disqualification of your answers or further disciplinary action.
3. 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 on the exam booklet.

Written-Answer Instructions

1. Write your candidate number at the top of each sheet. Your name must not appear.
2. Write on only one side of a sheet. Start each question on a fresh sheet. On each sheet, write the number of the question that you are answering. Do not answer more than one question on a single sheet.
3. The answer should be confined to the question as set.
4. When you are asked to calculate, show all your work including any applicable formulas.
5. When you finish, insert all your written-answer sheets into the Essay Answer Envelope. Be sure to hand in all your answer sheets because they cannot be accepted later. Seal the envelope and write your candidate number in the space provided on the outside of the envelope. Check the appropriate box to indicate morning or afternoon session for Exam RETDAU.
6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

Canadian version of this exam is recognized by the Canadian Institute of Actuaries.

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.

****BEGINNING OF EXAMINATION****
Morning Session

1. (6 points)

- (a) (2 points) Compare and contrast the following types of projections for a defined benefit pension plan:
- (i) Deterministic
 - (ii) Stochastic
- (b) (4 points) Explain the rationale for performing projections for a public sector pension plan from the perspectives of the following stakeholders:
- (i) Society/Taxpayers
 - (ii) Public Employees
 - (iii) Unions
 - (iv) Public Sector Employers

2. (9 points)

- (a) (3 points) Describe six non-investment risks to which retirees may be exposed.
- (b) (3 points) Describe a risk management strategy that retirees can apply for each risk identified in part (a).

Company ABC sponsors a post-employment health plan. Company ABC has decided to eliminate retiree contributions and increase the value of the medical benefit.

- (c) (3 points) Describe the impact of the plan change on the Defined Benefit Cost recognized under International Accounting Standards IAS 19, Rev 2011.

No calculations required.

3. (5 points)

- (a) (2 points) List the communications and disclosure requirements of the Society of Actuaries Code of Professional Conduct for an actuarial report.

The entire assumptions section of a defined benefit pension accounting report is as follows:

Discount rate	Based on high-quality corporate bond yield curve
Expected long-term rate of return on assets	4.00%
Salary scale	4.00%
Mortality	Plan-specific mortality rates
Retirement	Varies based on age
Termination	Varies based on service
Disability	None assumed
Decrement timing	Mid-year
Optional form of payment	Straight life annuity; 10 year certain & life annuity
Actuarial cost method	Projected unit credit
Census data	As of January 1, 2019

- (b) (3 points) Critique the adequacy of the above assumptions disclosure based on the following Actuarial Standards of Practice:
- (i) No. 27, Selection of Economic Assumptions for Measuring Pension Obligations
 - (ii) No. 35, Selection of Demographic and other Noneconomic Assumptions for Measuring Pension Obligations

4. (8 points)

- (a) (2 points) Describe four employer objectives when establishing a non-qualified retirement plan.

Company ABC is proposing to freeze their defined benefit non-qualified plan for executives and providing a new defined contribution non-qualified plan for future service.

Key provisions are outlined below:

Provision	Defined Benefit Plan	Defined Contribution Plan
Benefit	2% of final average earnings (last 36 consecutive months of base salary)	18% of annual base salary and bonus, accumulated with interest credits
Contribution	100% Employer funded	100% Employer funded
Early Retirement Benefit	Reduced by 0.25% per month early retirement precedes age 60	Value of Notional Account
Form of Benefit	50% Joint and Survivor benefit	Paid in installments over 10 years
Pre-Retirement Death Benefit	Benefit paid in full to spouse over lifetime; If no spouse, none	Value of Notional Account paid to spouse; If no spouse, beneficiary
Post-retirement Indexing	Benefits indexed with inflation	None
Vesting	100% after 10 years of service	Immediate

- (b) (3 points) Critique each of the plan provisions for the defined contribution plan from Company ABC's perspective.

Company ABC recently hired a single 30-year-old executive with a significant portion of her compensation paid in bonuses.

- (c) (3 points) Describe the advantages and disadvantages of the plan change from the executive's perspective.

- 5.** (10 points) Company XYZ sponsors two defined benefit pension plans. Company XYZ is evaluating options that would reduce required cash funding and accounting costs in 2019.

Company XYZ's plans are subject to the following government rules:

- Cash funding - An annual cash contribution is required to fund to 80% on a plan termination basis. No contributions required if the plan is at least 80% funded on a plan termination basis.
- Accounting - U.S. Accounting Standard ASC 715 applies.
- Plan Insurance - Pension plan benefits are insured by a governmental agency. Annual premiums equal \$500 per participant which must be paid directly by the company and not out of plan assets.
- Plan Mergers - no restrictions.

Information for the two pension plans as of January 1, 2019 is as follows:

	Plan A	Plan B
Active and Deferred Vested Participant Count	300	100
Active and Deferred Vested Plan Termination Liability	\$60,000,000	\$25,000,000
Retiree Participant Count	1,000	500
Retiree Plan Termination Liability	\$230,000,000	\$115,000,000
Total Assets	\$220,000,000	\$126,000,000

Company XYZ's CFO has proposed merging the plans and purchasing buy-out annuities on January 1, 2019 for the Retirees in Plan A to reduce the annual government insurance premiums. Assume that Company XYZ is able to purchase annuities equal to the plan termination liability.

- (a) (6 points) Recommend one of the following actions for Company XYZ:
- (i) Take no action
 - (ii) Only merge the plans
 - (iii) Merge the plans and purchase annuities
- Justify your response and show all work.
- (b) (2 points) Explain the accounting implications of your recommendation in part (a).
- (c) (2 points) Describe how your recommendation would change if buy-in annuities were proposed instead of buy-out annuities.

6. (8 points)

(a) (3 points) Describe the advantages and disadvantages of the following savings vehicles from a participant's perspective:

- (i) 401(k) Plans
- (ii) Traditional IRAs
- (iii) Health Savings Accounts

Company ABC sponsors a 401(k) plan and would like to evaluate its effectiveness in providing adequate retirement income for its employees.

(b) (2 points) Describe key metrics Company ABC might use in its evaluation.

Based on the evaluation, Company ABC concluded it should focus on modifying its current investment offerings within the 401(k) plan.

(c) (3 points) Describe the factors Company ABC should review in proposing changes to its investment offerings.

Question 7 pertains to the Case Study.

7. (6 points)

- (a) (3 points) Critique the following assumptions used in the NOC Full-Time Hourly Union Pension Plan (“Hourly Pension Plan”) accounting disclosures:
- (i) Retirement Age
 - (ii) Termination Rates
 - (iii) Mortality Rates

The actuary proposed an accounting discount rate by matching the term of high quality corporate bonds issued in local currency with the cash flows of the Hourly Pension Plan obligations. The CFO of NOC has directed the actuary to use a higher discount rate.

- (b) (3 points) Recommend a course of action to address the CFO’s direction.

Justify your response.

- 8.** (8 points) Company ABC sponsors a defined benefit final average pay plan with no lump sum option. Company ABC is considering freezing the existing accrued benefit and implementing a cash balance formula with a lump sum payout option for future accruals.
- (a) (2 points) Describe why Company ABC might take this approach.
- (b) (3 points) Explain how the following risks shift between the employer and the employee as a result of the transition from a final average pay formula to a cash balance formula:
- (i) Portability
 - (ii) Longevity
 - (iii) Inflation
- (c) (3 points) Describe three embedded options that can be included in a cash balance plan design to limit the employee's exposure to interest crediting rate fluctuations.

****END OF EXAMINATION****
Morning Session

USE THIS PAGE FOR YOUR SCRATCH WORK