

Retirement Design and Pricing Exam Syllabus

Fall 2012/Spring 2013

Canada

Important Exam Information:

Exam Date and Time	A 15 minute read-through time will be given prior to the start of the exam.
Exam Registration	Candidates may register online or with an application.
Order Study Notes	Study notes are part of the required syllabus and are not available electronically but may be purchased through the online store.
Introductory Study Note	The Introductory Study Note has a complete listing of all study notes as well as errata and other important information.
Case Study	This case study will also be provided with the examination. Candidates will not be allowed to bring their copy of the case study into the examination room
Past Exams	Past Exams from 2000-present are available on SOA web site.
Updates	Candidates should be sure to check the Updates page on the exam home page periodically for additional corrections or notices.

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Exam	Retirement DP
Instructional Objectives	
1. The candidate will be able to analyze different types of registered/qualified defined benefit and defined contribution plans, as well as retiree health plans.	
Learning Outcomes	
The candidate will be able to:	
<ul style="list-style-type: none"> a) Describe the structure of the following plans: <ul style="list-style-type: none"> ▪ Fixed dollar and pay-related defined benefit plans ▪ Hybrid plan designs such as, cash balance, pension equity, and floor offset plans, flexible pension plans ▪ Defined contribution plans including 401(k) plans and capital accumulation plans ▪ Retiree Health Plans b) Describe the process and apply the principles of conversions from one plan type to another c) Apply methods of the integration of government-provided benefits with retirement plan designs d) Given a plan type, explain the relevance and range of plan features including the following: <ul style="list-style-type: none"> i) Plan eligibility requirements ii) Benefit eligibility requirements, accrual, vesting and phased retirement iii) Benefit / contribution formula iv) Payment options and associated adjustments to the amount of benefit v) Ancillary benefits vi) Benefit subsidies and their value, vested or non-vested vii) Participant investment options viii) Required and optional employee contributions ix) Phased retirement and DROP plans 	
Syllabus Resources	
<ul style="list-style-type: none"> • Morneau Sobeco, <i>Handbook of Canadian Pension and Benefit Plans</i>, 14th edition, 2008, Chapters 1, 2 and 12 • Towers Watson, <i>Canadian Pensions and Retirement Income Planning</i>, 4th edition, 2009, Ch. 1 p. 29-33, 39-47 and Ch. 23 • Yamamoto, <i>Fundamentals of Retiree Group Benefits</i>, 2006, Ch. 4, pp. 57-68 and 90-115, Ch.5 pp. 117-133 and 144-149 • R-D100-11: Multi-Employer Plans • R-D101-07: Converting Pension Plans from DB to DC • R-D139-11: The Use of Health Savings Accounts for Health Care in Retirement, EBRI, April 10, pp.1-6 	

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- R-D144-12: Risk Allocation Retirement Plans: A Better Solution, Fuerst, Morgan Stanley
- R-D145-12 :Legal and Research Summary Sheet: Phased Retirement, Georgetown Law
- R-D146-12: Evaluating the Design of Private Pension Plans: Costs and Benefits of Risk Sharing
- R-D601-07: Canadian Pension Plan Design
- CIA Ed Note: Financial Risks Inherent in Multi-employer Pension Plans and Target Benefit Pension Plans, CIA Task Force on MEPP/TBPP Funding <http://www.actuaries.ca/members/publications/2011/211039e.pdf>

Exam

Instructional Objectives

2. The candidate will understand how the regulatory environment affects plan design and how to apply relevant restrictions.

Learning Outcomes

The candidate will be able to, for the designated region:

- a) Explain and apply the regulatory limits placed on types of plans that can be offered
- b) Explain and apply restrictions on plan design features to a proposed plan design
- c) Explain and test for limits on plan designs and features that protect participant rights
- d) Test for plan design restrictions intended to control the use of tax incentives
- e) Calculate the limitations on payout options
- f) Explain and apply rules governing the conversion from one type of plan to another

Syllabus Resources

- Morneau Sobeco, *Handbook of Canadian Pension and Benefit Plans*, 14th edition, 2008, Chapters 2, 8, 9, 11, 12
- Towers Watson, *Canadian Pensions and Retirement Income Planning*, 4th edition, 2009, 1, 2, 5, 6, 7, 8, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 23
- R-D150-12: Turner, *Pension Policy: The Search for Better Solutions*, 2009, Ch. 5, pp. 93-94
- R-D600-12: Ontario Pension Benefits Act RRO 1990, Reg 909
- R-D606-07: OSFI Policy on Conversion – Guideline for Converting Plans from DB to DC
- R-D610-09: Towers Perrin Summary of minimum Standards for Phased Retirement Under Registered Pension Plans

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- R-D611-09: Not Just a Phase
- R-D612-12: Ontario Pension Benefits Act R.S.O. 1990, Chapter p.8
- R-D614-11: CSOP 3100-3500, Dec. 2010

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Instructional Objectives
3. The candidate will be able to analyze plans designed for executives or the highly paid
Learning Outcomes
<p>The candidate will be able to:</p> <ul style="list-style-type: none"> a) Given a specific context, apply principles and features of executive deferred compensation retirement plans b) Given a specific context, apply principles and features of supplemental retirement plans c) Integrate a plan for executives with the basic benefit plan
Syllabus Resources
<ul style="list-style-type: none"> • R-D621-12: Allen, <i>Retirement Plans: 401(k)s, IRAs, and Other Deferred Compensation Approaches</i>, 10th Edition, 2008, chap 14, pp. 247-260 • Morneau Sobeco, <i>Handbook of Canadian Pension and Benefit Plans</i>, 14th edition, 2008, Chapter 11 • Towers Watson, <i>Canadian Pensions and Retirement Income Planning</i>, 4th edition, 2009, Ch. 16 p. 313, Ch. 17 p. 376-378, Ch. 18 p. 390-393 • R-D103-07: Should Variable Pay Count Towards Benefits • R-D147-12: Executive Retirement Benefits Practices: 2011 Report, Towers Watson • R-D602-07: “Funding Supplementary Pension Plans”, Marcel Theroux, Canadian Tax Foundation, 1996 Annual Conference • R-D603-07: Securing Supplemental Retirement Arrangements • R-D604-07: “Creative Compensation Arrangements for private Corp”, Marcel Theroux, Canadian Tax Foundation, 1998 Ontario Conf., • R-D616-09: <i>Executive Compensation</i>, Medland, Lexpert/CCCA Corporate

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Exam
Instructional Objectives
4. The candidate will understand alternative plan types that occur internationally
Learning Outcomes
<p>The candidate will be able to:</p> <ul style="list-style-type: none"> a) Compare and give examples of different plan types and features <ul style="list-style-type: none"> i. Social Insurance ii. Alternative employer sponsored systems b) Give examples of the structure of different plan types c) Give examples of plans that could work for multinational companies and their employees including third country nationals and expatriates
Syllabus Resources
<ul style="list-style-type: none"> • R-D108-07: Pension Challenges and Pension Reforms in OECD Countries, Peter Whiteford, Edward Whitehouse, <i>Oxford Review of Economic Policy Vol 22 No. 1</i>, 2008 • R-D140-11: Private Pensions: Alternative Approaches Could Address Retirement Risks Faced by Workers but Pose Payoffs, pp.1-38 GAO • R-D141-11: Sharing Risk: The Netherlands' New Approach to Pensions, Center for Retirement Research • R-D142-11: How to Close the Funding Gap in Dutch Pension Plans? Impact on Generations • R-D150-12: Turner, <i>Pension Policy: The Search for Better Solutions</i>, 2009, Ch. 1 p. 4-11 • R-D148-12: Chapter 34 of <i>The Handbook of Employee Benefits: Health and Group Benefits</i>, Seventh Edition • R-D152 -12: International (offshore) Pension Plans – a Growing Trend, Mercer

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Exam
Instructional Objectives
5. The candidate will be able to apply/synthesize the various methods used to value a pension plan or retiree health plan for various purposes.
Learning Outcomes
<p>The candidate will be able to:</p> <p>a) Differentiate between the various purposes for valuing pension plans:</p> <ul style="list-style-type: none"> i) Budgeting ii) Funding iii) Accounting iv) Solvency v) Termination/wind-up vi) Economic value <p>b) Perform periodic valuations of ongoing plans, calculating normal cost and actuarial liability, using the variety of cost methods for budgeting, funding, accounting and measuring economic value.</p> <p>c) Analyze and communicate the pattern of cost recognition that arises under a variety of funding and asset valuation methods.</p> <p>d) Perform valuations for special purposes, including:</p> <ul style="list-style-type: none"> i) Plan termination/windup ii) Solvency valuations iii) Open group valuations <ul style="list-style-type: none"> • e) Assess the impact of using various cost methods in a given context
Syllabus Resources
<ul style="list-style-type: none"> • Anderson, <i>Pension Mathematics for Actuaries</i>, Third Edition, 2006, Ch. 1-4, 6, 7 • Morneau Sobeco, <i>Handbook of Canadian Pension and Benefit Plans</i>, 14th edition, Ch. 5 with pages 124-138 for background only • Towers Watson, <i>Canadian Pensions and Retirement Income Planning</i>, 4th edition, 2009, Ch. 15 • Yamamoto, <i>Fundamentals of Retiree Group Benefits</i>, 2006, Ch 9 pp 287-294

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- R-D109-07: Financial Economics and Canadian Pension Valuation, September 2006 paper by CIA Task Force
- R-D127-12: ASOP No. 6, Measuring Retiree Group Benefit Obligations
- R-D143-11: The Funding of State and Local Pensions: 2009-2013, Boston Center for Research – Appendices for background only
- R-D600-12: Ontario Pension Benefits Act, R.R.O. 1990, Reg 909
- R-D612-12: Ontario Pension Benefits Act R.S.O. 1990, Chapter P.8
- R-D613-12: CIA CSOP November, 2009-1840
- R-D614-11: CIA CSOP 3100-3500, December, 2010
- R-D615-09: CIA CSOP 6000-6600, March 2009
- R-D618-11: CIA Educational Note: Determination of Best Estimate Discount Rates for Going Concern Funding Valuations
- R-D619-11: Educational Note: Calculation of Incremental Cost on a Hypothetical Wind-Up or Solvency Basis

- CIA Education Note: Guidance on Asset Valuation Methods, November 2007
<http://www.actuaries.ca/members/publications/2007/207102e.pdf>
- Pension Forum 9/2002 on asset method Ch. 1, 3, 4, 5 , <http://www.soa.org/library/newsletters/pension-forum/2002/september/pfn0209.pdf>
- 8/2001 Pension Forum, “Dynamic Pension Plan Valuation”, pp.71-82 <http://www.soa.org/library/newsletters/pension-forum/2001/august/pfn0108.pdf>

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Instructional Objectives
6. The candidate will be able to analyze/synthesize the factors that go into selection of actuarial assumptions.
Learning Outcomes
<p>Given a context and/or data, the candidate will be able to:</p> <ol style="list-style-type: none"> a) Evaluate actual experience, including comparisons to assumptions b) Adjust current assumptions, given past experience and future expectations in trends c) Evaluate appropriateness of current assumptions given the purpose d) Describe and explain the different perspectives on the selection of assumptions e) Describe and apply the building of economic assumptions f) Assess and explain the effect that the assumptions selected had on valuation results g) Recommend appropriate assumptions for a particular type of valuation (e.g., ongoing, termination, etc.) and defend the selection h) Select demographic and economic assumptions appropriate for a sensitivity analysis i) Select demographic and economic assumptions appropriate for a projection valuation designed for a given goal
Syllabus Resources
<ul style="list-style-type: none"> • Yamamoto, <i>Fundamentals of Retiree Group Benefits</i>, 2006, Ch 9 pp 256-278 • R-D109-07: Financial Economics and Canadian Pension Valuation, CIA Task Force • R-D112-10: 2009 Selection of Actuarial Assumptions, Consultant Resource Manual, SOA Version, Mercer – omit pages 13-31, 34-37 and 63-64 • R-D114-07: An Introduction to Duration for Pension Actuaries • R-D115-07: Reinventing Pension Actuarial Science with discussion • R-D117-07: Pension Projections • R-D125-11: ASOP No. 35 Selection of Demographic and other Noneconomic Assumptions for Measuring pension Obligations • R-D126-12: ASOP No. 27 – Selection of Economic Assumptions • R-D127-12: ASOP No. 6, Measuring Retiree Group Benefit Obligations • R-D129-09: How the Liability Benchmark is Developed and Used in Practice • R-D137-10: Discounting State and Local pension Liabilities • R-D607-07: Pension Surplus and Deficit Funding: Funding of Multi-Employer Plans

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- R-D609-07: Pension Funding Exercises (background only)
- R-D613-12: CIA CSOP 1000-1800, February 2011
- R-D614-11: CIA CSOP 3100-3500, December 2010
- R-D615-09: CIA CSOP 6000-6600 March 2009
- R-D617-12: CIA Education Note – Assumptions for hypothetical Wind-Up and Solvency Valuations with Effective Dates Between December 31, 2010 and December 30, 2011
<http://www.actuaries.ca/members/publications/2011/211044e.pdf>
- R-D622-12: CIA Educational Note Supplement: Assumptions for Hypothetical Wind-Up and Solvency Valuations with Effective Dates from December 31, 2011 to December 30, 2012
- A Practical Approach to Gains Analysis Revisited” by Andrew Smith, *Pension Section News*, Sept. 93 <http://www.soa.org/library/newsletters/pension-section-news/1993/september/psn9309.pdf>
- A Practical Approach to Gains Analysis by Josian Lynch – *TSA Vol 27* pp.423-439 <http://www.soa.org/library/research/transactions-of-society-of-actuaries/1975/january/tsa75v2717.pdf>
- SOA Long Term Healthcare Trends Resource Model, Practical Issues for Actuaries,
<http://www.soa.org/Files/Research/Projects/research-soa-health-model.pdf>
- Modeling Long Term Healthcare Cost Trends, Getzen,
<http://www.soa.org/Files/Research/Projects/research-getzen-health-cost.pdf>
- CIA Educational Note on Selection of Mortality Assumptions for Pension Plan Actuarial Valuations, March 2008
<http://www.actuaries.ca/members/publications/2008/208014e.pdf>
- Measuring Terminable Postretirement Obligations, Petertil
<http://www.soa.org/library/journals/north-american-actuarial-journal/2005/january/naaj0501-7.pdf>
- Jan 05 Pension Forum – <http://www.soa.org/library/newsletters/the-pension-forum/2005/january/pfn0501.pdf>
- 8/2001 Pension Forum, A Look at Dynamic Pension Plan Valuation, 71-82 , <http://www.soa.org/library/newsletters/pension-forum/2001/august/pfn0108.pdf>
- Selecting and Documenting Mortality Assumptions for Pensions, appendix is background only
http://www.actuary.org/pdf/pension/PC_update_mortalityPN_111021.pdf
- CIA Educational Note: Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans <http://www.actuaries.ca/members/publications/2011/211088e.pdf>

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Instructional Objectives
7. The candidate will be able to analyze data for quality and appropriateness.
Learning Outcomes
Given a context, the candidate will be able to: a) Assess data quality b) Identify data needed c) Make and/or recommend appropriate assumptions where data cannot be provided
Syllabus Materials
<ul style="list-style-type: none">• R-D130-09: ASOP No.23 – Data Quality• R-D613-12: CIA CSOP- February 2011

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Instructional Objectives
8. The candidate will be able to evaluate the actuarial considerations in plan options and administration.
Learning Outcomes
<p>The candidate will be able to:</p> <p>a) Assess the gain/loss from options offered, including:</p> <ul style="list-style-type: none"> ▪ Phased retirement ▪ Postponed retirement ▪ Early retirement ▪ Option factors ▪ Embedded Options <p>b) Assess the impact of applicable regulation, including:</p> <ul style="list-style-type: none"> ▪ Commuted value standard
Syllabus Resources
<ul style="list-style-type: none"> • R-D119-07: Actuarial Equivalent Benefits • R-D614-11: CSOP 3100-3500, December 2010 • Embedded Options in Pension Plans Catalog of Embedded Options Survey of Prevalence of Embedded Options, pp.1-17 http://www.soa.org/search.aspx?searchterm=Catalog%20of%20Embedded%20Options%20Survey%20of%20prevalence%20of%20Embedded%20Options • Forman and Scahill, “Issues for Implementing Phased Retirement in Defined Benefit Plans,” <i>North American Actuarial Journal</i>, July 1, 2003. http://www.soa.org/library/journals/north-american-actuarial-journal/2003/july/naaj0307_6.pdf CIA Ed Note: Financial Risks Inherent in Multi-Employer Pension Plans and Target Benefit Pension Plans, CIA TF on MEPP/TBPP Funding. http://www.actuaries.ca/members/publications/2011/211039e.pdf

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Instructional Objectives
9. The candidate will be able to understand principles and rationale behind regulation.
Learning Outcomes
The candidate will be able to: a) Describe the principles and motivations behind tax policy b) Describe the principles and motivations behind pension legislation and regulation c) Describe sources and framework of government regulation
Syllabus Resources
<ul style="list-style-type: none">• Morneau Sobeco, <i>Handbook of Canadian Pension and Benefit Plans</i>, 14th edition, Ch. 8 pp 177-183 • R-D150-12: Turner, <i>Pension Policy: The Search for Better Solutions</i>, 2009, Ch. 5• R-D151-12: The Impact of the Financial Crisis on Defined Benefit Plans and the Need for Counter-Cyclical Funding Regulation, OECD

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Instructional Objectives
10. The candidate will be able to analyze the relationship of plan investments with plan design and valuations.
Learning Outcomes
In a given context, the candidate will be able to:
<ul style="list-style-type: none"> a) Evaluate the interaction of plan investments and: <ul style="list-style-type: none"> ▪ Plan design, ▪ Plan funding, ▪ Valuation assumptions, and ▪ Valuation methods. b) Solve for a measure of investment performance relevant to a given benchmark c) Given a context, describe and compare the structure of appropriate investment vehicles
<ul style="list-style-type: none"> • R-D620-12: Allen, et al, <i>Retirement Plans: 401 (k)s, IRAs, and Other Deferred Compensation Approaches</i>, 10th edition, 2008, Ch. 24 • Morneau Sobeco, <i>Handbook of Canadian Pension and Benefit Plans</i>, 14th edition, Ch. 6 • R-D120-07: Asset/Liability Modeling and Asset Allocation for Pension Plans (Wendt) • R-D123-07: Maginn and Tuttle, <i>Managing Investment Portfolios</i>, Third Edition Chapter 12 through Section 7 only • R-D124-11: Introduction and Overview of Retirement Plan Investments • R-D129-09: How the Liability Benchmark is Developed and Used in Practice • R-D131-09: Plan Sponsor Guide to Liability-Driven Investing Investment Strategies • R-D132-09: Top 10 Myths About Liability-Driven Investing • R-D133-09: Maginn and Tuttle Chapter 8, Section 6 – Hedge Funds • R-D149-12: Green DB, Eliminate Wasteful Practices and make your DB Plan Sustainable

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Instructional Objectives
11. The candidate will be able to apply standards of practice and the guides to professional conduct.
Learning Outcomes
<p>In general or in a given context, the candidate will be able to:</p> <ol style="list-style-type: none"> a) Explain and apply the Guides to Professional Conduct b) Explain and apply the relevant qualification standards c) Demonstrate knowledge of requirements regarding the actuary's responsibilities to the participants, plan sponsors, etc. d) Explain and apply all of the applicable standards of practice related to valuing retirement obligations e) Recognize situations and actions that violate or compromise Standards or the Guides to Professional Conduct f) Recommend a course of action to repair a violation of the Standards or the Guides to Professional Conduct
Syllabus Resources
<ul style="list-style-type: none"> • R-D125-11: ASOP 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations • R-D126-12: ASOP 27, Selection of Economic Assumptions for Measuring Pension Obligations • R-D127-12: ASOP 6, Measuring Retiree Group Benefit Obligations • R-D130-09: ASOP 23 Data Quality • R-D135-12: ASOP 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions • R-D613-12: CIA General Standards 1000-1800-- Revised, February 2011 • R-D614-11: CIA Consolidated Standards of Practice - Practice Specific Standards for Pension Plans 3100-3500 December 2010 • CIA, Rules of Professional Conduct http://www.actuaries.ca/members/publications/2006/206091e.pdf • SOA Guides to Professional Conduct http://www.soa.org/about/membership/about-code-of-professional-conduct.aspx • SOA Qualification Standards http://www.soa.org/about/membership/about-req-admission.aspx • CIA Qualification Standards Canada only http://www.actuaries.ca/membership/enrollment_e.cfm