

Exam RETDAU

Date: Friday, April 29, 2022

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 13 questions numbered 1 through 13 with a total of 100 points.

The points for each question are indicated at the beginning of the question. Questions 2, 4, and 6 pertain 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.

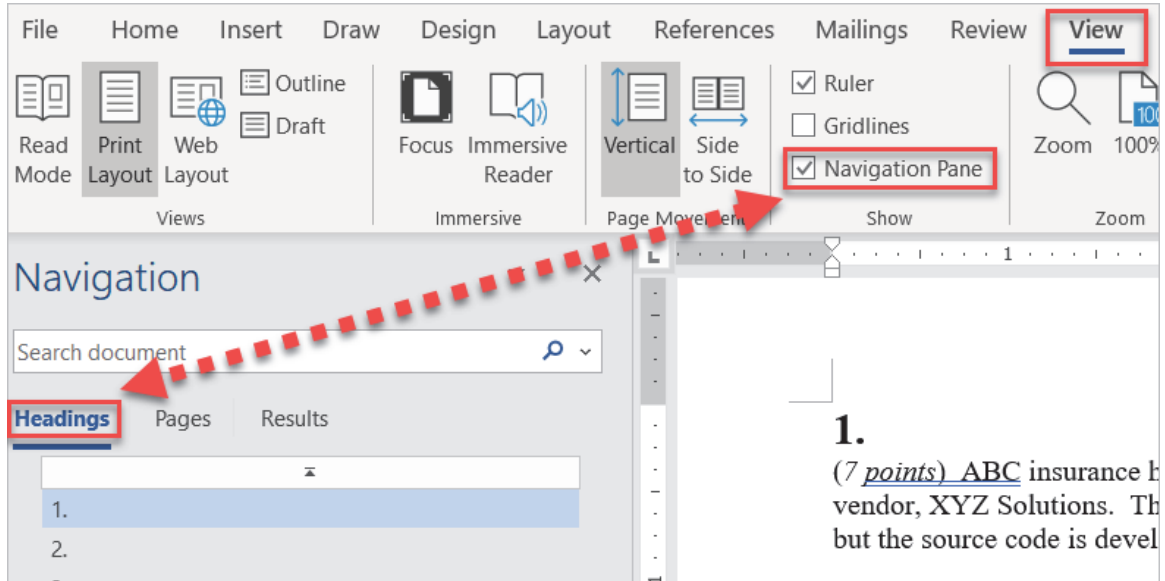
Written-Answer Instructions

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

ANSWER:

- (b) (2 points) Describe the factors to consider in selecting the mortality assumption in accordance with Actuarial Standards of Practice No. 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations.

ANSWER:

Company ABC sponsors a retiree group benefits plan with the following plan provisions:

- Earliest benefit eligibility is age 55 with 10 years of service.
- Retirees are required to contribute 50% towards the cost of the benefits.

The actuary has proposed the following demographic assumptions for the retiree group benefits plan valuation:

Retirement	Age 65
Mortality	Pri-2012 with no mortality improvements
Termination	None
Disability	None
Retiree Participation	100%
Spouse/Dependent Participation	0%

- (c) (3 points) Critique the appropriateness of the above assumptions based on Actuarial Standards of Practice No. 6, Measuring Retiree Group Benefit Obligations and Determining Retiree Group Benefits Program Periodic Costs or Actuarially Determined Contributions.

ANSWER:

Question 2 pertains to the Case Study.

2.

(6 points) National Oil Company (NOC) wants to implement a defined contribution plan for its employees in Gevrey.

The plan will allow the following:

- Voluntary employee contributions up to 10% of salary
- Matching employer contributions of 100% of employee contributions to a maximum of \$5,000 per annum
- Withdrawals permitted every 2 years up to 25% of the accumulated account balance

(a) (3 points) Describe the risks of the proposed plan design from the perspective of plan participants.

ANSWER:

(b) (3 points) Recommend six changes to the plan design that would help participants maximize retirement income.

Justify your response.

ANSWER:

3.

(9 points) Company ABC is estimating the 2023 Net Periodic Pension Cost under U.S. Accounting Standard ASC 715 (ASC 715) for budget purposes.

Information for the pension plan is provided below for year-end 2021.

	December 31, 2021
Projected Benefit Obligation (PBO)	\$1,164,740
Market Value of Assets	\$1,264,714
Unrecognized (Gain)/Loss in Accumulated Other Comprehensive Income (AOCI)	\$373,966
Discount Rate	3.75%
Expected Return on Assets	6.25%

	2022	2023
Service Cost (Beginning of Year)	\$59,347	\$61,127
Interest Cost	\$45,155	
Expected Return on Assets	(\$78,918)	
Amortization of Gain Loss	\$20,798	
Net Periodic Pension Cost	\$46,382	
Expected Contribution	\$35,849	\$36,207
Expected Benefit Payments	\$39,900	\$42,294
Average Future Working Lifetime	11.8	12.3

PBO Duration	15.0
Service Cost Duration	20.0

Expenses	Assume all expenses paid by company
Asset valuation method	Market value
Gain/loss amortization method	10% corridor; amortized over average future working lifetime

- (a) (3 points) Calculate the 2023 Net Periodic Pension Cost under ASC 715 assuming no experience gains or losses.

Show all work.

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

3. Continued

You are given the following:

Discount rate increase at December 31, 2022	0.50%
Market Value of Assets at December 31, 2022	\$1,364,000

- (b) (3 points) Calculate 2023 Net Periodic Pension Cost under ASC 715 based on these new assumptions.

Show all work.

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

Company ABC is considering the following de-risking strategies:

- Strategy 1: Moving a portion of their target asset allocation from equities to fixed income over a period of 3 years
 - Strategy 2: Providing a one-time option to all terminated vested employees to receive a lump sum payment in lieu of future benefit
- (c) (3 points) Describe the impact of these strategies on Company ABC's financial results under ASC 715 in the short and long term.

No calculations required.

ANSWER:

Question 4 pertains to the Case Study.

4.

(9 points)

- (a) *(3 points)* Describe how NOC and the participants of the NOC benefit plans are impacted by the following risks:
- (i) Health care inflation risk
 - (ii) Longevity risk
 - (iii) Retirement risk

ANSWER:

- (b) *(4 points)* Recommend four plan design changes to the National Oil Retiree Health Benefit Program to mitigate the impact of NOC's rising health care costs.

Justify your response.

ANSWER:

A recent mortality study of the National Oil Retiree Health Benefit Program concluded that plan participants are living longer than expected.

- (c) *(2 points)* Evaluate the impact on the Accumulated Postretirement Benefit Obligation under U.S. Accounting Standard ASC 715 if the mortality assumption was updated to reflect the results of the study.

No calculations required.

ANSWER:

5.

(7 points)

- (a) (1 point) Describe the considerations when selecting an asset valuation method under Actuarial Standard of Practice No. 44, Selection and Use of Asset Valuation Methods for Pension Valuations.

ANSWER:

5. Continued

Company ABC is reviewing its asset valuation method for accounting purposes for its defined benefit pension plan. You are given the following:

Year	2018	2019	2020	2021
Actual benefit payments paid mid-year	\$900,000	\$1,000,000	\$1,000,000	\$1,000,000
Contributions paid mid-year	\$300,000	\$800,000	\$700,000	\$400,000
Expenses paid mid-year	\$190,000	\$200,000	\$200,000	\$250,000
Expected Return on Assets	7.0%	7.0%	7.0%	7.0%
Fair Value of Assets at 1/1	\$14,100,000	\$14,000,000	\$13,000,000	\$14,000,000
Market-related Value of Assets at 1/1	\$15,200,000	\$14,900,000	\$14,700,000	\$15,100,000

	2022
Service Cost	\$0
Projected Benefit Obligation	\$20,000,000
Unrecognized Net Transition Obligation	\$0
Unrecognized Prior Service Cost	\$500,000
Unrecognized Net Actuarial (Gain)/Loss	\$4,000,000
Expected benefit payments paid mid-year	\$950,000
Expected contributions paid mid-year	\$400,000
Average expected future service	8.0
Remaining period for prior service cost amortization	5.0
Discount rate	4.0%
Expected Return on Assets	7.0%
Fair Value of Assets at 1/1	\$13,500,000

(b) (5 points) Calculate the 2022 Net Periodic Pension Cost under U.S. Accounting Standard ASC 715 using the following asset valuation methods:

- (i) Fair Value of Assets
- (ii) Market-related Value of Assets with unrecognized gains and losses smoothed over five years.

Show all work.

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

Company ABC is considering making a large contribution next year to improve their funding deficit while also changing their asset allocation to be more liability hedged. Company ABC currently uses the Market-related Value of Assets with unrecognized gains and losses smoothed over five years.

- (c) (1 point) Recommend whether Company ABC should move to using the Fair Value of Assets valuation method.

Justify your response. No calculations required.

ANSWER:

Question 6 pertains to the Case Study.

6.

(8 points) NOC's actuary recommends future annual contributions to the Pension Plan equal to Service Cost plus a five-year amortization of unfunded Projected Benefit Obligation under U.S. Accounting Standard ASC 715.

- (a) (1 point) Calculate the 2022 contribution savings if NOC follows the actuary's contribution recommendation and were to freeze all future benefit accruals, including Best Average Earnings, effective January 1, 2022.

Show all work.

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

NOC decides to freeze all future benefit accruals in the Pension Plan, including Best Average Earnings, and add a defined contribution (DC) plan on January 1, 2022.

You are given the following:

	Participant 1	Participant 2
Age at 1/1/2022	45	57
Service at 1/1/2022	10	29
2022 Salary	\$40,000	\$355,000
Assumed Retirement Age	60	62
Historical and Future Annual Salary Scale	3.0%	3.0%
Assumed rate of return for DC contributions	6.00%	6.00%

Assume contributions are made at the end of the year.

Age	60	62
Present Value Factors	20.5	17.2

- (b) (5 points) Calculate the total flat-dollar annual contribution to the DC plan to provide the same replacement ratio prior to the plan freeze for the following:
- (i) Participant 1
 - (ii) Participant 2

Show all work.

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

Question 6 pertains to the Case Study.

6. Continued

- (c) (2 points) Analyze the impact of this plan change on retirement income adequacy for the following:
- (i) Participant 1
 - (ii) Participant 2

ANSWER:

7.

(7 points) Company A recently purchased a domestic competitor, Company Z.

You are given the following regarding Company Z:

- Has both local employees and expatriates
- Does not have a pension plan
- The expatriates are on short-term and long-term assignments outside of their home country

Company A sponsors a local defined benefit pension plan.

- (a) (2 points) Describe risks and challenges to Company A when including the expatriates in their local defined benefit pension plan.

ANSWER:

Company A decided to implement a Capital Accumulation International Pension Plan (CAIPP) with notional contributions and a single guaranteed investment fund for its expatriates on assignment.

- (b) (2 points) Describe Company A's operational considerations before implementing the CAIPP.

ANSWER:

- (c) (3 points) Critique the design of the CAIPP from the acquired expatriates' perspective.

ANSWER:

8.

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

Benefit Service	One year granted for at least 1,800 hours worked in a year; no partial credit; capped at 25 years
Final Average Pay	Highest average of 3 consecutive years of actual pay out of the last 5 years
Normal Retirement Age	65
Early Retirement Age	55 with 5 years of service
Early Retirement Benefit	Reduced 3% per year from age 62 if 10 or more years of service; actuarially reduced from Normal Retirement Age otherwise

Company ABC is implementing a phased retirement program.

- (a) (3 points) Recommend design changes to each of the following plan provisions to encourage utilization of the phased retirement program:
- (i) Benefit service
 - (ii) Final average pay
 - (iii) Early retirement benefits

Justify your response.

ANSWER:

- (b) (3 points) Assess the impact of a proposed plan design change from each subsection of part (a) under U.S. Accounting Standards ASC 715 on the following:
- (i) Projected Benefit Obligation
 - (ii) Service Cost

No calculations required and justify your response.

ANSWER:

9.

(9 points) Company A is considering acquiring Company Z. Company A sponsors a nonqualified defined contribution (NQDC) plan for its executives. Company Z provides a nonqualified defined benefit (NQDB) pension plan for its executives.

- (a) (4 points) Describe the objectives of Company A's due diligence process when reviewing Company Z's NQDB pension plan.

ANSWER:

Company A acquired Company Z and wants to simplify the delivery of nonqualified benefits while minimizing executive turnover.

- (b) (5 points) Propose three strategies for Company A to achieve their goals.

Justify your response.

ANSWER:

10.

(7 points)

- (a) (3 points) Compare and contrast the effect tax policy has on high-income employees and low-income employees participating in a defined contribution (DC) pension plan with respect to the following:
- (i) Contributions
 - (ii) Investment earnings
 - (iii) Benefit payments

ANSWER:

- (b) (2 points) Describe the unintended consequences of the following policies implemented in response to COVID-19 on DC pension plan members:
- (i) Suspension of employer contributions
 - (ii) Early access to retirement savings accounts

ANSWER:

- (c) (2 points) Describe four policy guidelines recommended by the Organization for Economic Co-operation and Development (OECD) to help ensure long-term sustainability of retirement savings arrangements.

ANSWER:

11.

(9 points) Company XYZ sponsors a final average pay defined benefit pension plan.

- (a) (2 points) Compare and contrast the impact of closing the pension plan to new entrants under U.S. Accounting Standard ASC 715 (ASC 715) and International Accounting Standard IAS 19, Rev. 2011 (IAS 19) on the following:
- (i) Net Periodic Pension Cost
 - (ii) Funded Status
 - (iii) Other Comprehensive Income

No calculations required.

ANSWER:

Company XYZ closed the pension plan to new entrants.

- (b) (4 points) Compare and contrast the impact of freezing future service accruals under ASC 715 and IAS 19 on the following:
- (i) Net Periodic Pension Cost
 - (ii) Funded Status
 - (iii) Other Comprehensive Income

No calculations required.

ANSWER:

11. Continued

Company XYZ's pension plan is closed to new entrants and has frozen future service accruals for all plan participants.

- (c) (3 points) Compare and contrast the impact of freezing future pay accruals under ASC 715 and IAS 19 on the following:
- (i) Net Periodic Pension Cost
 - (ii) Funded Status
 - (iii) Other Comprehensive Income

No calculations required.

ANSWER:

12.

(8 points)

- (a) (1 point) Describe how the New Brunswick Shared Risk Pension Plan (SRPP) is better suited for the public sector versus the private sector.

ANSWER:

- (b) (5 points) Compare and contrast a public sector SRPP and a unionized multiemployer pension plan (MEPP) with respect to the following:

- (i) Benefit design
- (ii) Regulatory risk management framework

ANSWER:

An employer with members in multiple jurisdictions wants to establish a pension plan similar to the New Brunswick SRPP.

- (c) (2 points) Describe the issues related to an SRPP with members in multiple jurisdictions.

ANSWER:

13.

(8 points)

- (a) (2 points) Describe the advantages of integrating an employer provided retirement plan with a defined benefit social security program from the plan sponsor's perspective.

ANSWER:

- (b) (2 points) Propose two ways to integrate an employer provided retirement plan with a defined benefit social security program.

ANSWER:

- (c) (4 points) Describe the challenges in achieving full integration of an employer provided retirement plan with a defined benefit social security program.

ANSWER:

****END OF EXAMINATION****