

Exam RET 101

Date: Thursday, November 20, 2025

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 7 questions numbered 1 through 7 with a total of 50 points.

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

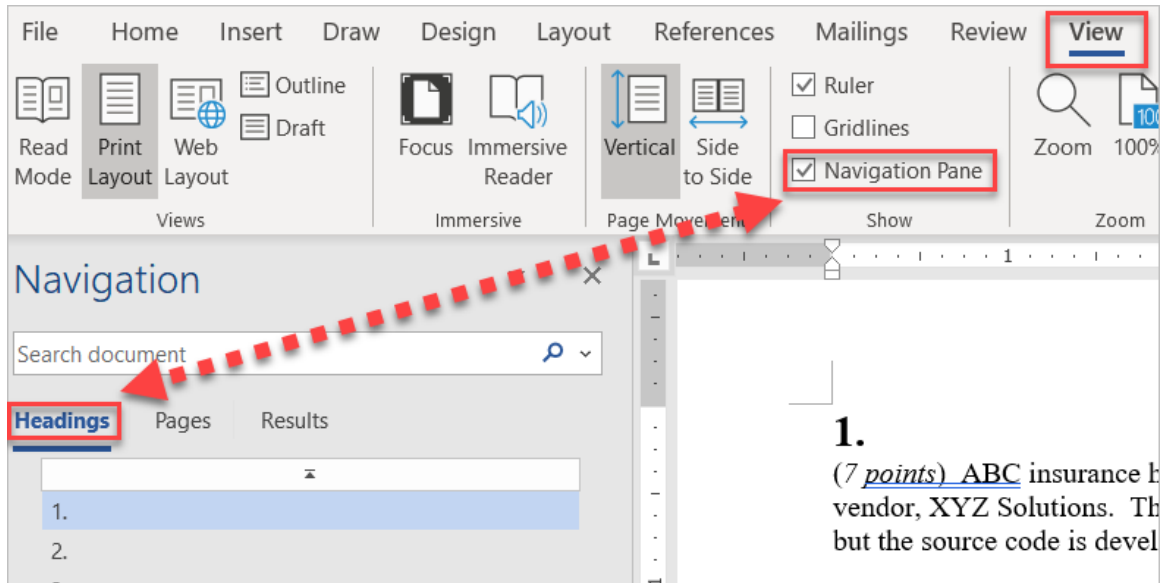
Written-Answer Instructions

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 unique candidate number in the filename. To maintain anonymity, please refrain from using your name and instead use your candidate number.
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.

1.

(4 points)

- (a) (2 points) Describe the disadvantages of using the conventional earnings replacement ratio to measure retirement income adequacy.

ANSWER:

- (b) (2 points) Describe the risks that impact an employee's ability to generate adequate retirement income through a defined contribution plan.

ANSWER:

2.

(7 points) Multiemployer Pension Plan A (Plan A) is merging with Multiemployer Pension Plan B (Plan B), effective January 1, 2027. Each group of collectively bargained employees will maintain their existing plan provisions.

You are given the following:

| | Plan A | Plan B |
|--|--|--|
| Plan Provisions | | |
| Monthly benefit formula | \$200 per year of credited service | 1.6% of employer contributions |
| Credited service | Less than 500 hours = 0.0 500-1,000 hours = 0.5 1,000-1,500 hours = 0.75 Greater than 1,500 = 1.0 | Less than 500 hours = 0.0 500-1,000 hours = 0.5 Greater than 1,000 = 1.0 |
| Participant Data | | |
| Number of participants | 50,000 | 20,000 |
| • Active | 30,000 | 4,000 |
| • Retired | 20,000 | 16,000 |
| Average hours worked for active members | 1,250 | 1,525 |
| Average contribution rate for active members | \$8.75 per hour | \$9.25 per hour |
| Other Plan Information | | |
| Funded percentage | 83.0% | 105.0% |

- (a) (3 points) Describe how the merger could mitigate risks faced by Plan A and Plan B.

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| ANSWER: |
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2. Continued

For benefits earned on or after January 1, 2027, the Board of Trustees is considering changing the benefit formula for all participants to be the same as that of former Plan A.

(b) (3 points) Describe the impact of the potential change on the following:

- (i) Participants
- (ii) Funding

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| ANSWER: |
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(c) (1 point) Explain why an actuary may want to consider using an open-group projection for a multi-employer plan with a declining workforce.

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| ANSWER: |
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3.

(9 points)

- (a) (2 points) Describe two benefits of integrating an employer sponsored defined benefit pension plan with a defined benefit social security program from the following perspectives:
- (i) Plan sponsor
 - (ii) Plan participants

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| ANSWER: |
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Company ABC operates in a country that has a social security benefit that has an earnings cap on the benefit. Company ABC sponsors a career average pay defined benefit pension plan for its employees. Company ABC has some employees that earn above the earnings cap.

- (b) (4 points) Critique the following methods of integrating plan benefits with a social security program:
- (i) Excess Benefits design
 - (ii) Benefits Offset design

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| ANSWER: |
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- (c) (3 points) Describe the reasons Company ABC might establish the following:
- (i) A nonqualified supplemental pension arrangement
 - (ii) A defined benefit pension plan that requires employee contributions

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| ANSWER: |
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4.

(8 points) Company ABC participates in a multi-employer defined contribution (DC) plan. Employees are in a highly cyclical industry with a large proportion of earnings paid in the form of performance bonuses.

The DC plan has the following features:

- Employer contribution rate of 9% of total earnings
- Mandatory employee contribution rate of 6% of total earnings
- Optional employee contribution rate of up to 3% of total earnings

The DC plan was designed with the following objectives:

- Objective 1: Provide income adequacy for plan members
- Objective 2: Minimize risks borne by retirees
- Objective 3: Ensure predictability of costs for participating employers

(a) (4 points) Critique the DC plan considering the stated objectives.

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| ANSWER: |
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(b) (2 points) Compare and contrast the DC plan with the College of Applied Arts and Technology (CAAT) Pension Plan in terms of meeting the second and third objectives.

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| ANSWER: |
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(c) (2 points) Compare and contrast variable annuities and insured annuities in terms of how each reduces the risks borne by retirees.

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| ANSWER: |
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5.

(8 points) Company XYZ sponsors an open defined benefit pension plan. Company XYZ's pension plan has the following target investment allocation:

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| Stocks | 20% |
| Fixed Income | 80% |

Company XYZ completes an annuity buy-out transaction.

- The transaction represents 45% of total plan liabilities.
- The plan is 90% funded after the transaction.

- (a) (3 points) Recommend changes to the target investment allocation after the transaction using stocks and fixed income.

Justify your response.

ANSWER:

- (b) (3 points) Critique adding the following alternative asset classes to the plan's investment portfolio:

- (i) Private equity
- (ii) Real estate
- (iii) Infrastructure

ANSWER:

- (c) (2 points) Describe how the investment risks in the plan could change by adding a lump sum payment option.

ANSWER:

6.

(6 points)

- (a) *(4 points)* Recommend ways the following features of a Target Benefit Plan can be designed to best mimic a traditional defined benefit pension plan:

- (i) Contributions
- (ii) Benefit accruals
- (iii) Ancillary benefits
- (iv) Trigger points for benefit adjustment

Justify your answer.

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| ANSWER: |
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- (b) *(2 points)* Describe two intergenerational risks unique to a Target Benefit Plan.

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| ANSWER: |
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7.

(8 points)

- (a) (2 points) Explain why employers may pursue pension risk transfer activities for their defined benefit pension plans.

ANSWER:

- (b) (4 points) Critique the use of the following strategies to settle pension liabilities:

- (i) Lump sum windows
- (ii) Annuity purchase

ANSWER:

- (c) (2 points) Propose two alternative options instead of liability settlement for a sponsor to reduce the risk of their defined benefit pension plan.

ANSWER:

****END OF EXAMINATION****