

Exam RETRPIRM

Date: Friday, May 13, 2022

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 6 questions numbered 1 through 6 with a total of 40 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.

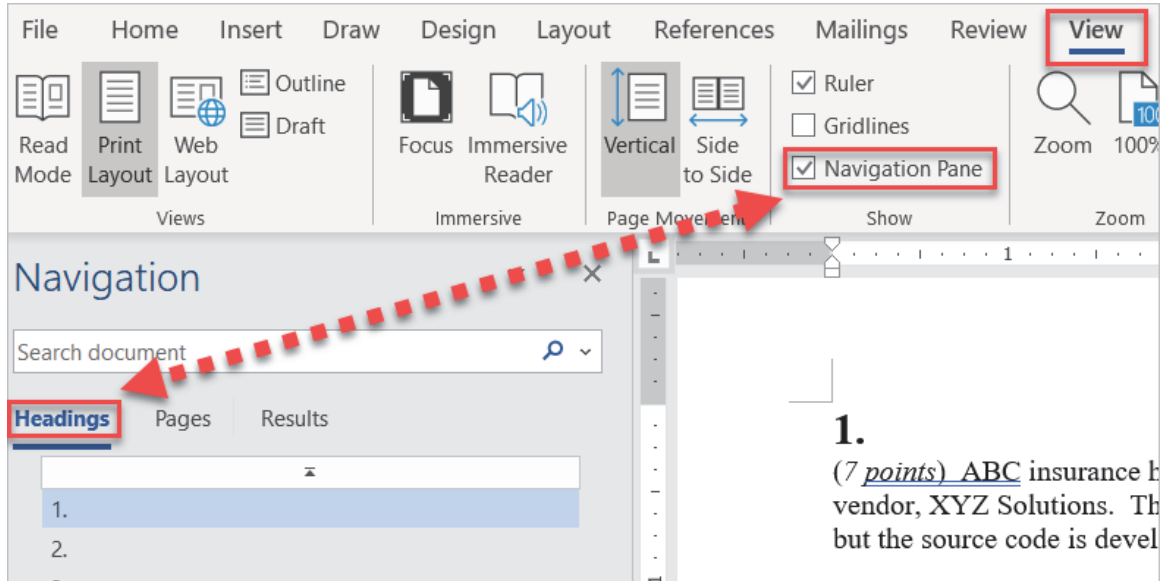
Written-Answer Instructions

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.
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:



1.

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

Liabilities by Status	
• Actives	\$5 Million
• Deferred Vested	\$10 Million
• Retired	\$20 Million
Total	\$35 Million
Assets	\$22 Million
Cost of Living Adjustments	100% of CPI

Company ABC would like to reduce the volatility of the plan's funded status and simplify the governance of the investments of the pension plan.

- (a) (4 points) Compare and contrast the following strategies:
- (i) Purchasing a buy-in annuity for the liabilities of the retired participants.
 - (ii) Delegating the investment management operations of the pension plan.

ANSWER:

Company ABC has decided to delegate the investment management operations of the pension plan to an external vendor and is considering Vendor XYZ. Vendor XYZ:

- Demonstrates above average performance compared to peers due to the use of leverage.
- Offers to bundle their investment services with actuarial services for a discount.
- Suggests that they can use a more "optimistic" actuarial valuation approach so that clients can also save on funding costs and accounting expense.

Company ABC has not requested proposals from other vendors in the market.

- (b) (2 points) Recommend whether Company ABC should employ Vendor XYZ for their services. Provide justification for your recommendation.

ANSWER:

2.

(7 points)

- (a) (3 points) Describe the risks faced by plan members of a defined contribution (DC) pension plan with assets invested in target date funds during the:
- (i) accumulation phase; and
 - (ii) decumulation phase.

ANSWER:

- (b) (4 points) Recommend strategies to mitigate the risks identified in (a).

ANSWER:

3.

(7 points)

- (a) (3 points) Describe four advantages of counter-cyclical funding regulations for defined benefit pension plan sponsors.

ANSWER:

- (b) (4 points) Describe four regulatory incentives that could promote the counter-cyclical of funding rules.

ANSWER:

4.

(8 points)

- (a) (2 points) Describe the limitations of using bonds to hedge a defined benefit liability.

ANSWER:

- (b) (1 point) Explain how holding interest rate swaps hedges interest rate risk.

ANSWER:

- (c) (1 point) Describe steps to mitigate counterparty risk, as it relates to the interest rate swap contracts.

ANSWER:

Company XYZ sponsors a defined benefit pension plan with the stated objective of becoming fully funded with minimal cash contributions. The defined benefit pension plan has the following characteristics.

Funded Status	80%
Hedge Ratio	60%
Liability-hedging Fixed Income Allocation	75%

Company XYZ is considering the following strategies to increase the hedge ratio to 80%.

- Increasing the duration of the fixed income assets
- Increasing the fixed income allocation
- Entering into an interest rate swap contract

- (d) (3 points) Compare and contrast the three strategies.

ANSWER:

4. Continued

- (e) *(1 point)* Recommend a strategy that meets the Company's objective. Justify your recommendation.

ANSWER:

5.

(6 points) You are given the following information about two companies:

(\$thousands)	Company Balance Sheet				Pension	
	Assets	Liabilities	Equity	Long-Term Debt	Assets	Liabilities
Company A	47,162	34,453	12,709	20,994	11,663	12,983
Company B	70,659	52,267	18,392	24,437	3,764	2,298

(a) (1 point) Calculate the following ratios for each company, adjusted for the net pension obligation:

- Debt-to-equity ratio;
- Long-term debt to equity ratio; and
- Asset-to-equity ratio.

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

(b) (3 points) Calculate the following ratios for each company using a holistic corporate balance sheet approach:

- Debt-to-equity ratio;
- Long-term debt to equity ratio; and
- Asset-to-equity ratio.

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

(c) (2 points) Describe the advantages of using the holistic corporate balance sheet approach in (b) versus the traditional balance sheet approach used in (a).

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

6.

(6 points) An investment manager's portfolio and benchmark weights and returns are provided below:

Sector	Portfolio		Benchmark	
	Weight	Return	Weight	Return
Banking and Finance	35%	3.25%	32%	7.23%
Manufacturing	19%	6.59%	27%	5.78%
Natural Gas	16%	2.82%	5%	1.56%
Oil	22%	5.22%	25%	4.31%
Tourism and Hospitality	8%	-0.50%	11%	0.41%
	100%		100%	

- (a) (1 point) Calculate the Pure Sector Allocation Return.

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

- (b) (1 point) Calculate the Within-Sector Selection Return.

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

- (c) (2 points) Critique the manager's sector-weighting and security-selection decisions.

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

- (d) (2 points) Describe the last component required to explain the total portfolio return.

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

****END OF EXAMINATION****