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**SOCIETY OF ACTUARIES**  
**Design & Accounting Exam – U.S.**

# Exam RETDAU

## AFTERNOON SESSION

**Date:** Thursday, May 5, 2016

**Time:** 1:30 p.m. – 3:45 p.m.

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### INSTRUCTIONS TO CANDIDATES

#### General Instructions

1. This afternoon session consists of 5 questions numbered 8 through 12 for a total of 40 points. The points for each question are indicated at the beginning of the question. Question 11 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.



## **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\*\***  
**Afternoon Session**  
***Beginning with Question 8***

- 8.** (6 points) Public and private pension systems have come under increased pressure due to the following conditions:
- Population aging
  - Poor financial market returns
  - Low interest rates
- (a) (4 points) Explain how each of these conditions impact:
- (i) Pay-as-you-go public pension systems
  - (ii) Funded private pension systems
- (b) (2 points) Describe possible policy actions to help improve financial sustainability of public defined benefit pension systems.

9. (8 points) Company ABC is considering offering a savings program that combines a profit sharing plan (“PSP”) with a 401(k) plan with an employer-matching contribution.

The Board of Directors would like the following features in the savings program:

- Contributions made to the PSP only when profit margins are greater than 6%
  - For the past 10 years, average profit margins for Company ABC have been between 3% and 7%. Future profit margins are expected to remain in this range.
- The allocation of PSP contributions and 401(k) plan employer-matching contributions will be different for hourly and salaried employees, weighted based on age and service.

Employees would like the following features included in the 401(k) plan:

- Flexibility to withdraw a portion of their 401(k) account while actively employed
- Older employees would like to defer a large percentage of their earnings into their 401(k) account to help prepare for retirement

- (a) (4 points) Recommend changes to the features proposed by the Board of Directors and employees, taking into account IRS rules with respect to:

- (i) Contribution requirements for PSPs
- (ii) Coverage requirements for PSPs
- (iii) Elective deferral limitations for 401(k) plans
- (iv) Withdrawal provisions for 401(k) plans

Justify your response.

- (b) (2 points) Recommend four plan design features to help Company ABC pass the Actual Contribution Percentage (ACP) test.

Justify your response.

- (c) (2 points) Explain how each of the four features from part (b) conflict with the features proposed by the Board of Directors and employees.

**10.** (7 points)

- (a) (4 points) Describe the risks that impact an employee's ability to generate adequate retirement income through a defined contribution plan.
- (b) (3 points) Describe actions an employer can take to improve post-retirement income adequacy in a defined contribution plan.

**Question 11 pertains to the Case Study.**

- 11.** (11 points) On March 31, 2016, NOC announced that it will be closing a major location on September 30, 2016. As a result of the closure, half of the salaried population will be laid off.

NOC management is interested in the impact of the closure on the National Oil Full-Time Salaried and Union Retiree Health Benefit Program.

You are given the following (below numbers are in \$000's):

- Assume 2016 expected benefit payments and duration of plan liabilities remain unchanged.
- Reduction in Accumulated Postretirement Benefit Obligation due to the closure as of the remeasurement date is 1,000,000.
- Service Cost for the remainder of the year after the remeasurement date is 25,000.
- The discount rate on the remeasurement date is 4.25%.
- No other actuarial gains or losses are expected during the year.
- Aggregate Future Working Lifetime to Full Eligibility of remaining participants after the closure is reduced by 35%.

- (a) (4 points) Describe the accounting treatment of this event under International Accounting Standard 19 and U.S. Accounting Standard ASC 715.

No calculations required.

- (b) (7 points) Calculate the revised 2016 Net Periodic Benefit Cost under ASC 715.

Show all work.

**12.** (8 points) Company XYZ is considering one of the following changes to its defined benefit final average pay plan:

Option 1: Adding an option to receive a lump sum benefit at retirement.

Option 2: Adding a cost of living increase if the plan's asset returns exceed 9%.

Option 3: Changing the design to a floor-offset plan.

- (a) (2 points) Describe the considerations under Actuarial Standard of Practice No. 4 when measuring plan provisions that are difficult to measure.
- (b) (3 points) Describe the risks faced by the plan sponsor and plan participants under each option.
- (c) (3 points) Recommend a methodology to value Option 2.

Justify your response.

**\*\*END OF EXAMINATION\*\***  
**Afternoon Session**



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