****BEGINNING OF EXAMINATION 8 – U.S****
COMPREHENSIVE SEGMENT
MORNING SESSION

All questions pertain to the Case Study

1. (*15 points*) The members of the NOC Full-Time Hourly Union Pension Plan are considering joining a multi-employer pension plan with provisions similar to those of the Hourly Plan.

(a) Describe the advantages and disadvantages to NOC of joining the proposed plan.

(b) Explain how the actuarial assumptions for the proposed plan would likely differ from those currently used for the Hourly Plan.

(c) Explain how the factors that influence investment policy would likely differ between the proposed plan and the Hourly Plan.

2. (*9 points*) The government of Vosne is considering lowering the limit on periodic pension payments from $3,000 to $2,000 per annum per year of service.

Analyze the impact of this change on the design, funding and accounting of NOC's pension plans.

All questions pertain to the Case Study

3. (*10 points*)

(a) Describe the various objectives to consider when designing a retirement program.

(b) NOC is considering implementing a defined contribution plan for salaried employees hired on or after January 1, 2007 rather than enrolling them in the current plan. Describe the alternatives and considerations in setting the contribution formula.

4. (*10 points*) The government of Vosne is implementing a social security program that will provide some health care benefits to all citizens aged 65 and above. The costs of these benefits will be fully funded by the government.

(a) Describe the advantages and disadvantages of the methods that could be used to integrate the NOC Full-Time Salaried and Union Retiree Health Benefit Program with the proposed government plan.

(b) Recommend a method for NOC to adopt for the Union Hourly employee group. Justify your recommendation.

All questions pertain to the Case Study

5. (*8 points*) The CEO of NOC is concerned over the lack of coordination between the death benefits provided by its pension plans and its group life insurance benefit coverage. Assume that taxation of life insurance in Vosne is consistent with the U.S. and Canada.

(a) Justify the rationale for providing death benefits through pension plans.

(b) Describe the issues associated with the removal of the death benefit from the pension plans.

(c) Analyze the financial effect to NOC of removing the pension plan death benefit.

6. (8 *points*) NOC's CFO is budgeting for fiscal year 2007 in August of 2006. The CFO has asked you to estimate the fiscal year 2007 pension expense for the National Oil Full-Time Salaried Pension Plan.

You are given:

- NOC expects the discount rate to be 5.00% per annum at January 1, 2007;
- The projected benefit obligation has a duration of 12 at January 1, 2007;
- The service cost for 2007 has a duration of 20 at January 1, 2007;
- Assume no other gains or losses;
- Employer contributions for 2007 are estimated to be $43,000,000;
- Benefit payments for 2007 are estimated to be $22,000,000.

(a) Estimate the 2007 pension expense. Show all work.

(b) Describe the factors that could cause the actual 2007 pension expense to differ from the budgeted expense and the impact that each factor has on the components of the pension expense.

****BEGINNING OF EXAMINATION 8 – U.S.****
COMPREHENSIVE SEGMENT
AFTERNOON SESSION

All questions pertain to the Case Study

7. (*12 points*) The CFO of NOC is concerned about rising costs and high pension expense amounts. To address these concerns, the CFO is proposing a change in the asset mix for the NOC Full-Time Salaried Pension Plan.

	Current			Proposed	
Asset Class	Target Allocation %	Expected Return		Target Allocation %	Expected Return
Domestic Large Cap	30%	10%		15%	10%
Domestic Small Cap	25%	13%		15%	13%
Domestic Fixed Income	25%	5%		10%	5%
International Equities	10%	20%		15%	20%
Real Estate	5%	15%		5%	15%
Cash	5%	2%		10%	2%
Venture Capital	0%	25%		20%	25%
Municipal bonds	0%	4%		5%	4%
TIPS	0%	3%		5%	3%
Total	100%			100%	

	Current	Proposed
Expected Portfolio Variance	15%	20%
Expected Portfolio Beta	1.00	1.50
Expected Portfolio Alpha	2.00	1.75

Expected Total Market Return	8%
Expected Total Market Variance	12%
Risk-free Rate of Return	4%

(a) (*2 points*) Describe NOC's fiduciary responsibility with respect to the diversification of pension fund assets. Assume fiduciary responsibilities in Vosne are consistent with those in the U.S. and Canada.

(b) (*4 points*) Evaluate the appropriateness of the asset mix changes proposed by the CFO.

(c) (*6 points*) Calculate the Treynor and Sharpe ratios for the current target asset mix and the proposed target asset mix. Show all work. Based on this information, evaluate the CFO's proposal. Justify your response.

All questions pertain to the Case Study

8. (*10 points*) Evaluate the financial economics approach versus the traditional approach to valuing pension plan liabilities and assets in respect of the NOC Full-Time Salaried Pension Plan.

9. (*8 points*) You are the actuary for NOC and have presented the January 1, 2006 funding valuation results for the NOC Full-Time Hourly Union Pension Plan. The VP of HR now advises you that the data used to generate the results was faulty and you are given the following updated data.

National Oil Full-Time Hourly Union Pension Plan
Revised Reconciliation of Plan Participants (2005 – 2006)

	Active	Pensioners/ Beneficiaries	Total
Participants as of January 1, 2005	**6,295**	**1,034**	**7,329**
• New Entrants/Rehires	600	–	600
• Terminated Nonvested	(150)	–	(150)
• Terminated Vested (Lump Sum Cashout)	(125)	–	(125)
• Retirement	(20)	20	–
• Death w/ Beneficiary	(28)	28	–
• Death w/o Beneficiary	–	(22)	(22)
• Net change	277	26	303
Participants as of January 1, 2006	**6,572**	**1,060**	**7,632**

Participant Summary – January 1, 2006

Active Participants

(a)	count	6,572
(b)	average age	45.0
(c)	average service	16.6
(d)	average future working lifetime	10.9
(e)	average plan earnings (prior year)	43,183

Deferred Vested Participants

(a)	count	–

Pensioners (including beneficiaries)

(a)	count	1,060
(b)	average age	75.0
(c)	average annual benefit	10,800

9. **(Continued)**

(a) *(2 points)* Assess the situation in light of the SOA Code of Professional Conduct.

(b) *(6 points)* Evaluate the impact that the revised data could have on your January 1, 2006 funding valuation results.