

THE UNIVERSITY OF WESTERN ONTARIO

Actuarial Science 1021A

Test 1

February 12th 2018

1 hour

Name (print clearly): _____

STUDENT ID (print clearly): _____

INSTRUCTIONS

1. This is a closed book examination. Write your answers on the space provided. If needed you can write on the backside of the pages.
2. **Written answer questions should be answered in bullet or point form. For calculation questions, please show your work.**
3. This paper includes a total of 7 pages. There are **6 questions worth a total of 55 marks.**
4. **Use the detailed marking breakdown as a rough guideline for time spent on each question and question part.**
5. Calculators are permitted.
6. **Please use a pen** (although you may use pencil for questions requiring calculations)

| Question | Your mark |
|-------------------------|-----------|
| 1. 10 marks | |
| 2. 8 marks | |
| 3. 8 marks | |
| 4. 9 marks | |
| 5. 10 marks | |
| 6. 10 marks | |
| TOTAL MARKS (55) | |

GOOD LUCK!

1. (10 marks)

- (a) (2 marks) In developed countries, generally the more income a person has the greater level of economic security they have. With regards to income, what are some key points to consider when assessing if economic security exists.

real income.
certainty of income
standard of living.

- (b) (2 marks) Provide 4 different examples of things or events that can cause economic insecurity.

Unemployment
Unexpected expenses.
Premature deaths.
Personal Factors.

- (c) (2 marks) James Silver earned \$40,000 a year, which is well above minimum wage. Does this assure sufficient income? Justify your answer.

No. Because his expenses is not provided.

- (d) (1 marks) Provide an example of how inflation can cause economic insecurity for the elderly.

The savings might be enough currently for the elderly, but as the inflation occurs, the saving might not be enough.

- (e) (1 marks) How does economic insecurity due to poor health compare for those living in Canada compare to those living in the United States? Why?

The problem will be more serious in the U.S. Because most Canadians are covered in health insurance but most Americans do not.

- (f) (1 mark) List 2 examples of Canadian (can be federal or provincial) social security programs that help address economic insecurity for those that are older (age 65 or more).

Registered Pension Plan.
OAS GIS.

- (g) (1 marks) How are Social Assistance programs funded?

Government tax revenue.

2. (8 marks)

- (a) (2 marks) Two of the principles for Social Security systems are the principle of Diversity and the principle of subsidiarity. Describe each of these 2 principles

principle of Diversity: use different ways to reduce economic insecurity.

subsidiarity: Government responsible for things that can't be handled by individuals themselves

Higher Gov

Lower Gov

Individual



Highest government levels should cover only what lower forms of government can't.

- (b) (6 marks) For each of the following statements indicate whether it applies to Social Insurance (SI) programs, Private Insurance (PI) programs, both programs (B), or neither programs (N).

| | Indicate if SI, PI, B or N |
|--|----------------------------|
| Predetermined benefits | PI B |
| More vulnerable to inflation | PI |
| Minimum floor of protection | SI |
| No contributions/premiums required 要投钱才有保险! | SI N |
| Means test Public Assistance | PI N |
| Fully funded | SI PI. |
| Pooling | B |
| Predictable costs | PI |
| Adequacy emphasis | PI SI. |
| Benefits are a contractual right | PI |
| Risk transfer | B |
| Government monopoly | SI. |

3. (8 Marks)

Tax Free Savings Accounts (TFSA) and Registered Retirement Savings Plans (RRSP) are two popular options for savings. For each of the following items, *briefly* comment on how TFSAs and RRSPS compare with respect to:

(i) **(2 marks)** eligibility requirements.

(ii) **(2 marks)** tax treatment of contributions, withdrawals, and investment growth.

(iii) **(1 mark)** plan or account closing date.

(iv) **(1 mark)** impact on means tested benefits (when money is withdrawn).

(v) **(1 marks)** use of funds to pay for a \$100,000 home (first home purchase).

(vi) **(1 mark)** Carry forward provisions.

4. (10 Marks)

- (a) (3 marks) Dean Watkins works for a car manufacturing company and is a member of a Registered Pension Plan (RPP). The credited benefit is \$100 per month of service for the first 15 years and \$125 per month of service thereafter. Dean has been a plan member since he was 30 and he retires the day he turns 65. What is his annual pension amount? Justify whether this pension will or will not assure economic security. What type of RPP is this?

- (b) (5 marks) Using the information below, determine the maximum RRSP contribution amount that Samantha Jones can make this year (2018).

| Year | Earned Income | Max. RRSP Limit | Pension Adjustment (PA) Value** | RRSP Contribution Made | Carry forward at end of year (e.o.y) |
|------|---------------|-----------------|---------------------------------|------------------------|--------------------------------------|
| 2015 | 130,000 | 24,930 | 6,000 | 12,500 | 3,000 |
| 2016 | 150,000 | 25,370 | 7,000 | 16,000 | |
| 2017 | 160,000 | 26,010 | 7500 | 20,000 [@] | |
| 2018 | | 26,230 | | | |

** reported on T4 for that calendar year

[@] assume no further contributions will be made for 2017 year

- (c) (2 marks) In 2017 Tim Jones returned to law school. That year he withdrew \$15,000 from his RRSP in order to help pay his education costs. Outline what the tax issues are and how much of the money withdrawn would Tim have to pay back to his RRSP.

5. (10 marks)

- (a) (1 Marks) What are considered the “three Pillars” of Old Age Financial Security?

- (b) (1 marks) Registered Pension Plans (RPPs) must comply with Provincial Benefits Standard Legislation and Canada Revenue Agency/Income tax legislation. What is the primary purpose of the provincial benefit standards legislation?

- (c) (1 marks). What is the *key* differentiating characteristic of Registered Defined Benefit Plans versus Registered Defined Contribution Plans?

- (d) (2 marks) What are key features of a hybrid Registered Pension Plan?

- (e) (2 marks) What type of pension formula is typically found in multi-employer plans? What is a general key distinguishing feature of multi-employer plans when comparing them to single employer plans?

- (f) (1 marks) What is the appeal to an employer in offering a group RRSP as opposed to a Registered Pension Plan (RPP)?

- (g) (2 marks). Paul’s commuted pension value is \$500,000 and it is fully locked in. John is age 60 and he is quitting his job as he has been offered a more senior role at another company. What are John’s options for his commuted pension value?

6. (10 marks)

- (a) (2 marks) A member of Western University's Academic (faculty) Pension plan earned \$120,000 in 2017. They had 10 years of service. In addition the employer contributions, the plan member contributed 5.5% of their salary in 2017. What is the plan member's Pension Adjustment (PA)?

- (b) (2 marks) How is the OMERS pension plan integrated with the Canada Pension plan?

- (c) (3 marks) Jim Wilkinson is a policeman and member of the OMERS pension plan. He retired at age 53 (on his birthday) and is eligible for pension benefits. Here is his salary information:

| | Years | Salary |
|-----------|-------|----------------------------------|
| Age 21-45 | 25 | Ranged between 30,000 and 60,000 |
| Age 46-48 | 3 | \$65,000 |
| Age 49-51 | 3 | \$68,000 |
| Age 52-53 | 2 | \$45,000 |

- (d) (2 marks) The OAS monthly pension amount is \$586.66. Anita Jones is 65 and she applies for the benefit. She has lived in Canada for the past 30 years. What monthly OAS benefit will she receive?

- (e) (1 marks) In terms of Social Security programs classifications, how would the OAS pension be categorized? Justify your answer.