

## FN241 Quiz 2 - Solutions

Provide precise and concise responses to the following questions referring to theories, concepts, and frameworks as discussed in the class materials and the main textbook. For quantitative problems, demonstrate the process of calculation and clearly highlight your answers as appropriate. Write down your answers clearly so that the lecturer can read them easily.

1. (9 points) Answer the following questions
  - a. (2 points) How does variable life insurance differ from traditional whole life insurance?
  - b. (3 points) List 3 dividend options and explain each option
  - c. (3 points) List 3 non-forfeiture options and explain each option
  - d. (1 point) How does a guaranteed purchase option protect an insured who may need additional life insurance in the future
    - a. VL is fixed-premium life insurance in which the death benefit and cash value vary according to the investment experience of a separate account maintained by the insurer. With VL, the cash value is not guaranteed, as it is with traditional WL insurance. If investment experience is favorable, the death benefit is increased. If the investment experience is poor, the death benefit is reduced, but I can never fall below the original face amount. This form of life insurance combines WL with a mutual fund.
    - b. Cash, reduction of next premiums, and dividend accumulations (See lecture notes for detailed explanation.)
    - c. Cash value, reduced paid-up, and extended term insurance (See lecture notes for detailed explanation.)
    - d. The guaranteed purchase option permits the insured to purchase additional life insurance coverage at specified times. The option protects insureds who have become uninsurable because evidence of insurability is not required to purchase the additional coverage.
  
2. (2 points) While sorting through their deceased grandmother's personal belongings, James and Tameka Williams found a life insurance contract. A cursory review showed that it was a \$50,000 whole life insurance policy purchased by their grandmother on her own life in 1984. The last premium was paid in 2010, shortly before their grandmother had a stroke and lost some of her mental faculties. Why is there a good chance that this policy is still of value?

According to the facts presented, a whole life policy had been in force many years before the insured lost some of her mental faculties and died. If the 2011 premium notice was not answered, the grace period went into effect. If the grace period expired and the company still had not heard from the policyowner, the extended term nonforfeiture option goes into effect. Given that premiums had been paid for 26-27 years, there should have been adequate cash value to extend the coverage from 2011 until the date when the insured died. If this is the case, the beneficiary listed in the policy or the heirs of the estate should receive the policy proceeds.

3. (7 points) A participating ordinary life policy in the amount of \$10,000 is sold to an individual, age 35. Assuming the interest rate of 4% and the following cost data are given:

Annual premium	\$200
Total dividends for 10 years	\$600
Cash value at end of 10 years	\$1,420
Accumulated value of the dividends at 4% for 10 years	\$813

- a. (2 points) Based on this information, compute the annual net cost per \$1000 of life insurance at the end of 10 years using the *traditional net cost method*.
- b. (5 points) Compute the annual *surrender cost index* per \$1000 of life insurance at the end of 10 years.

a.

Premium per year		200.0
No. Years		10.0
Total premiums		2,000.0
Total dividends	-	600.0
Net premiums for 10 years		1,400.0
Cash value	-	1,420.0
Insurance cost for 10 years		-20.0
Insurance cost per year		-2.0
<b>Insurance cost per \$1,000</b>		<b>-0.20</b>

b.

Premium per year		200.00
No. of year		10.00
Annuity due factor		12.49
Premiums acc at 4% for 10 years		2,497.27
Divs acc at 4% for 10 years	-	813.00
Net premiums		1,684.27
Cash value at the end of 10 years	-	1,420.00
Insurance cost for 10 years		264.27
Insurance cost per year		21.16
<b>Insurance cost per \$1,000 per year</b>		<b>2.12</b>