25. (3 points)

An insurance company was incorporated on January 1, 2012 and purchased the following three bonds in 2012 to support its liabilities:

Asset	Classification	Coupon received in 2012 ($000s)	Amortized value as at December 31, 2012 ($000s)	Market value as at December 31, 2012 ($000s)
AAA Bond	Held to Maturity	75	1,800	1,500
BBB Bond	Available for Sale	200	7,000	7,500
CCC Bond	Held for Trading	125	3,000	2,900

Assume the company is an income-tax exempt organization.

a. (0.5 point)

Calculate the investment income shown in the 2012 Income Statement.

b. (0.75 point)

Determine the value of each bond to be recorded in the 2012 financial statement.

c. (0.25 point)

Determine the total Accumulated Other Comprehensive Income for 2012.

d. (1.5 points)

Assuming that market interest rates decrease in 2013, indicate the impact on Net Income for each of the three asset classifications. Briefly describe your reasoning for each answer.

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For part b), a common mistake was that candidates mixed up the different models. Most of the candidates got partial credit on this question.

For part c), most of the candidates answered by describing the BCAR. A little less than half of the candidates managed to get full credit on this question.

Question 25

Answer key:

(a) Investment income = 75 + 200 + 125 = 400
Since CCC is classified as Held for Trading, the gain or loss needs to be recognized immediately.
Thus, the investment income = 400 + (2,900 – 3,000) = 300

(b) AAA – recorded as amortized value = 1,800
BBB – recorded as market value = 7,500
CCC – recorded as market value = 2,900

(c) AOCI = 7,500 – 7,000 = 500

(d) For Held for Maturity, the discounted incurred loss would remain the same as it is discounted using the book yield, which is not impacted by the market interest rate. The investment income would remain the same as the unrealized gain/loss is not recognized. Thus, no impact due on Net Income.

For Available for Sale, the discounted incurred loss would increase due to the decrease in discount rate. The investment income would stay the same as the unrealized gain/loss is not recognized. Thus, the Net Income would decrease.

For Held for Trading, the discounted incurred loss would increase due to the decrease in discount rate. The investment income would increase as the market value of the bond will be higher. The impact of Net Income depends on which effect is higher.

Actual candidate answer for full marks:

a.
75 + 200 + 125 + (2900 – 3000) = 300

b.
AAA 1800
BBB 7500
CCC 2900

c.
AOCI = 7500 – 7000 = 500

d.
AAA: no impact. Asset is measured at amortized value and discount rate is based on book yield which doesn't change either

BBB: the change in MV of bond goes to AOCI instead of NI but the discount rate is smaller, resulting in higher PV of liability, thus, NI would decrease
CCC; the change in MV of the bond flows through NI (with smaller interest rate, MV of asset is larger, the discount rate is smaller now too, resulting in change MV of liability. Thus, the overall movement of NI is uncertain.

Examiner's report:
This is a standard question which has been asked several times in the past. The concepts are simple and standard. Most students get very high marks on this.

Question 26

Answer key:

BCAR: Adjusted Surplus / Net Required Capital
66,000 / 48,374 = 136%

Net Require Capital: (edited to add brackets to solution)

$$\sqrt{B_1^2 + B_2^2 + B_3^2 + (\frac{B_4}{2})^2 + (\frac{B_4}{2} + B_5)^2 + to\ B_6^2} + B_7$$

$$= \sqrt{4{,}577^2 + 10{,}842^2 + 1{,}839^2 + (\frac{4{,}394}{2})^2 + (\frac{4{,}394}{2} + 41{,}000)^2 + 18{,}000^2} + 35$$

= 48,374

Credit Risk (B4):

Required capital for receivable from agents = 1,800 * 5% = 90

Required capital for reinsurance recoverables =
(50,000+850) * 2% + (20,000+2000) * 6% + (5,000+530) * 20%
= 3,443

Indicated Reinsurance Dependence Required Capital =
3,443 * (1.25 – 1) = 861

Adjusted Reserve Amount =
(50,000+850) + (20,000+2000) + (5,000+530) = 78,380
Minimum Reinsurance Dependence Required Capital = 78,380 * 1% = 784
Total required capital for Credit Risk =
90 + 3,443 + max (861,784) =

4,394

Interpretation:
Given a BCAR score greater than 100%, the implied balance sheet strength is secure

Actual candidate answer for full marks:
BCAR = Adjusted Surplus / Net Required Capital