

20. (5.25 points)

Using the following information for an insurance company (all figures in thousands of dollars):

Credit-Related Assets	Amount Held	Charge Factor
Non-affiliate and alien affiliate reinsurance recoverables subject to RBC	21,000	0.10
Interest, dividends, etc. due and accrued	750	0.01
Federal income tax recoverable	900	0.05
Recoverable from parent, subsidiaries and affiliates	-	0.05
Aggregate write-ins for other than investment assets	250	0.05
All other	20	0.05

The company has also calculated the following RBC Charges and balance sheet items:

Risk Category	RBC Charge
Cash	10
Bonds	40,000
Common stocks	20,000
Affiliated domestic insurers	25,000
Real estate	10,000
Basic loss reserving risk	400,000
Excessive growth penalty - loss reserve	75,000
Basic premium risk	300,000
Excessive growth penalty - written premium	25,000

Balance Sheet Item	Statement Value
Policyholders' surplus	525,000
Non-tabular loss & LAE discount	30,000
Tabular loss & LAE discount for indemnity	25,000

a. (1.75 point)

Calculate the final credit risk RBC charge.

b. (2.25 points)

Calculate R0 through R5 and the total RBC requirement for the insurance company.

c. (1.25 points)

Determine the action level indicated by the result of part b. above, and describe the actions of both the regulator and the company under the RBC Model Act.

**SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 20</b>	
<b>TOTAL POINT VALUE: 5.25</b>	<b>LEARNING OBJECTIVE: C.2</b>
<b>SAMPLE/ACCEPTED ANSWERS</b>	
<b>Part a: 1.75 points</b>	
<ul style="list-style-type: none"> <li>• Credit <math>R_3=21,000(.1)+750(.01)+900(.05)+250(.05)+20(.01) = 2166</math> Adjustment for Reins = <math>(1/2)(21000)(.1)=1050</math> Final <math>R_3=2166-1050=1116</math></li>   <li>• <math>(1/2)(21000)(.1)+(750)(.01)+(900)(.05)+(250)(.05)+(20)(.05)=1116</math></li> </ul>	
<b>Part b: 2.25 points</b>	
$R_0=25000$ $R_1=10+40000=40010$ $R_2=20000+10000=30000$ $R_3=1116$ $R_4=21000*.1*.5+400000+75000=1050+400000+75000=476050$ $R_5=300000+25000=325000$  $25000 + (40010^2+30000^2+1116^2+476050^2+325000^2)^{0.5}=603576$	
<b>Part c: 1.25 points</b>	
<ul style="list-style-type: none"> <li>• <math>(525000-30000)/(603576*.5)=164\% \rightarrow</math> Company Action Level No Action from regulators required. Company must submit plan to state on how they will reduce risks and/or increase capital.</li> <li>• <math>(525000-30000)/(603576*.5)=1.64</math> Company is at the company level of action so must submit plan to increase surplus and limit liabilities. Regulator doesn't need to take any action.</li> <li>• <math>495,000/(454,484.45*.5)=217.8\%</math> (Grader's Note: 454,484.45 was the calculated RBC requirement from part b) There is no action level because ratio is &gt; 200%. However, if the company's combined ratio is &gt; 120% then they would be in the company action level which then No action is required by the regulator and company has to submit an action plan how to raise capital/reduce risk.</li> <li>• Ratio = (surplus – nontab discount)/RBC=<math>(525000-30000)/(603,603.5)=82\%</math> (Grader's Note: 603,603.5 was the calculated RBC requirement from part b.) This puts the insurer in the company action level since ratio between 75% and 100%. The company must submit a report on how they will reduce risk or raise capital. Regulator is not required to act.</li> <li>• Adj Surplus = 495,000 Ratio = <math>(495K/1.204M*.5) = 82\% \rightarrow</math> Between 70% and 100%. (Grader's Note: 1.204M was the calculated RBC requirement from part b) Authorized Control Level -Regulator can take control of company but still discretionary -No action needed from company. (If candidate used calculated RBC from Part B (even though RBC may not be correct) and</li> </ul>	

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matched the ratio to appropriate level with correct responses from company and regulator then full credit was given)
<b>EXAMINER'S REPORT</b>
<ul style="list-style-type: none"><li>• Most candidates produced the five components of the credit risk charge, and candidates who moved <math>\frac{1}{2}</math> the reinsurance charge away from final credit risk charge were able to distinguish themselves amongst all candidates</li><li>• The RBC formula is essential knowledge for part b and most candidates were able to produce the formula. Some candidates transferred charges between the components. Most candidates were able to identify that part a was actually calculating <math>R_3</math>.</li><li>• Candidates performed the ratio calculation well generally, but the ratio was the most difficult aspect of the question since the surplus must be adjusted correctly. Candidates were able to distinguish themselves by adjusting the surplus correctly. The remaining components of part c were from the text and generally provided little trouble to candidates. Some candidates did not fully answer the question since they did not list responses for both regulator and company actions.</li><li>• Question 20 was straight from the syllabus texts. There was no higher level of knowledge other than reproducing exhibits and ideas studied from the reading material.</li></ul>
<b>Part a</b>
<ul style="list-style-type: none"><li>• Candidate was expected to know the charges composing the credit risk charge.</li><li>• Candidate was expected to recognize that <math>\frac{1}{2}</math> of reinsurance recoverable charge must be removed in order to arrive at <b>final</b> charge as requested by the question.</li><li>• In order to receive full credit, the candidate must combine the 5 related credit risk charges which were given. Remove half the charge for reinsurance recoverables. Then sum these amounts to receive the final charge.</li><li>• Common Errors<ul style="list-style-type: none"><li>-Did not remove <math>\frac{1}{2}</math> reinsurance recoverable charge</li><li>-Removed <math>\frac{1}{2}</math> total of all charges (i.e.: <math>0.5 * 2166 = 1083</math>)</li><li>-Left out one or more individual credit charge components</li></ul></li></ul>
<b>Part b</b>
<ul style="list-style-type: none"><li>• Candidates were expected to know the RBC formula and correctly produce the majority of its components.</li><li>• In order to receive full credit, the candidate must correctly calculate <math>R_0</math> through <math>R_5</math> and apply the RBC formula correctly to produce the final RBC charge.</li><li>• If the candidate identified their answer for part a as the <math>R_3</math> component, credit was given for <math>R_3</math> even if part (a) was done incorrectly.</li><li>• Common Errors<ul style="list-style-type: none"><li>-Classified risk charges as the incorrect component of the RBC formula.</li><li>-Subtracted the Excessive growth penalty from <math>R_4</math> and <math>R_5</math> instead of adding.</li><li>-Used an incorrect formula for RBC.</li></ul></li></ul>
<b>Part c</b>
<ul style="list-style-type: none"><li>• Candidates were expected to be able to match the calculated ratio to the correct action level and produce the appropriate company and regulator response. Candidates were not</li></ul>

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expected to produce the correct ratio since it required adjusting surplus correctly.

- In order to receive full credit, the candidate must correctly calculate the RBC ratio and match it to the appropriate action level. The candidate must then translate this action level to the appropriate company and regulator response.
- If the candidate utilized the RBC requirement calculated from part B even though it was calculated incorrectly, the candidate can receive credit for the ratio calculation if performed correctly.
- Common Errors
  - Not dividing ratio by  $\frac{1}{2}$  but relying on the ranges (<70,70-100,100-150, and 150-200)
  - Did not remove the Non-Tabular Loss & LAE discount from Surplus
  - Removed Tabular Loss & LAE discount for indemnity from the Surplus
  - Added Non-Tabular Loss & LAE discount to Surplus
  - Added Tabular Loss & LAE discount for indemnity to the Surplus
  - Matched Calculated Ratio to Wrong Action Level
  - Did not provide action from company based on RBC Model Act
  - Did not provide action from regulator based on RBC Model Act