

EXAMINATIONS

April 1997

Subject G — General Insurance

Paper Two

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *You have 15 minutes at the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only but notes may be made.*
2. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*
3. *Write your surname in full, the initials of your other names and your Candidate's Number on the front of the answer booklet.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all 4 questions, beginning your answer to each question on a separate sheet.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet and this question paper.

<p><i>In addition to this paper you should have available Actuarial Tables and an electronic calculator.</i></p>
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- 1 A UK proprietary general insurance company which has shareholders' funds of £265 million at 1 January 1996 writes only one class of business for which the claims experience does not vary greatly. The following information has been provided. (You may ignore Insurance Premium Tax for the purpose of this question.)

Paid Claims to End of Development Year (£ million)

Accident Year	Development Year					
	0	1	2	3	4	5
1991	88	128	151	167	175	177
1992	98	133	158	176	186	
1993	96	134	151	163		
1994	115	169	197			
1995	124	168				
1996	130					

Estimated Ultimate Claims (£ million)

Accident Year	As at 31 Dec 95	As at 31 Dec 96
1991	183	182
1992	192	193
1993	183	178
1994	221	227
1995	235	225
1996		254

Gross Recorded Written Premium (£ million)

Calendar Year

1991	205
1992	221
1993	234
1994	270
1995	290
1996	312

The following information is also available:

- Acquisition costs amount to 15% of written premiums.
- Additional expenses of 12% of premium are incurred uniformly during the policy exposure period.
- Claims handling expenses are 3% of claim amounts.
- Claims are paid on average half way through the year.

- (e) Technical reserves are invested with a gross income of 8% p.a. and shareholders' funds are invested yielding a gross income of 4% p.a., based on average funds at start and end of year. The market value of the assets backing the shareholders' funds has risen by 6% during 1996. (There have been no realised gains during 1996, and none of the investment income is franked.)
- (f) A gross dividend of £10m is payable to the company's shareholders.
- (g) The company pays tax at 30% on its taxable profits and Advance Corporation Tax is at the rate of 20%.
- (i) Construct the Revenue and Profit & Loss Accounts for the 1996 financial year stating any further assumptions that you make. [13]
- (ii) During 1997 the management of the company aim for a 10% increase in the value of the shareholders' funds. Using the information given above, but taking investment income on technical reserves in 1997 as £31 million, calculate the values of A and B , where the required underwriting result for the financial year is of the form $A * F_0 + B$, where F_0 is the fund at the start of 1997.

Define any symbols used and state any further assumptions made. [6]

- (iii) The projected claim ratio for this class of business for the accounting year 1997 is 74% and total expenses are 30% of earned premium.
- (a) Show the relationship between the required earned premium and shareholders' funds to achieve the target set out in part (ii) above.
- (b) Assuming the value of shareholders' funds as at the end of 1996 is £280 million determine the level of written premium required in 1997.
- (c) Comment on the result in (b). [6]

[Total 25]

- 2** (i) State the Statutory Minimum Solvency Margin required under current United Kingdom legislation for a general insurance company not writing health insurance. [4]
- (ii) List the main types of contingencies against which a solvency margin protects the policyholders of a general insurance company. [6]
- (iii) Outline ways in which a proprietary UK general insurance company could manage the extent to which its Statutory Solvency Margin is covered. [10]

[Total 20]

3 As an actuary working for a small consulting partnership in the UK you have been commissioned to give an opinion on the strength of the reserves held by a small regionally based UK insurance company writing motor and household insurance. The commissioner of the report is a potential purchaser but has not publicly declared an interest in the company.

- (i) Outline the format of your report and state to the extent it should comply with current professional guidance notes. [13]
 - (ii) State the sources of information from which you would obtain the data that would form the basis of your report. [3]
 - (iii) Discuss the form of data you would use and how you might analyse it, indicating particular areas you would investigate in detail. [14]
 - (iv) State and justify any reservations which you might include in the report. [3]
- [Total 33]

- 4**
- (i) A UK general insurance company writes a number of different lines of business. State the factors that should be considered when deciding upon the method to use for estimating ultimate claims costs. [4]
 - (ii) One of the classes of business is a small portfolio of Employer's Liability business. Describe an appropriate method for the insurer to calculate the reserves for its large outstanding reported claims, and state what data would be required. [6]
 - (iii) For its Motor business, the insurer has decided to use the average cost per claim method to calculate its outstanding claims reserve. The following data is available.

Cumulative claims amounts paid by the end of each development year
(£'000s)

Accident Year	Development Year				
	0	1	2	3	4
1992	196	261	295	314	318
1993	233	301	341	363	
1994	294	383	434		
1995	263	332			
1996	302				

Cumulative number of claims handled by the end of each development year

Accident Year	Development Year				
	0	1	2	3	4
1992	450	547	582	596	598
1993	510	616	656	672	
1994	620	750	802		
1995	540	641			
1996	601				

Past inflation (mid year to mid year)

1992–1993	4%
1993–1994	3%
1994–1995	2%
1995–1996	4%

Future inflation 3% per annum.

Assume claims are on average paid halfway through the year.

- (a) Discuss the suitability of the average cost per claim method in these circumstances.
- (b) Calculate the undiscounted reserve at the end of 1996, stating any assumptions made.

[12]

[Total 22]