

EXAMINATIONS

16 April 2002 (pm)

Subject 201— Communications

Time allowed: 1½ hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*
2. *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. You then have 1½ hours to complete the paper.*
3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.

<p><i>In addition to this paper you should have available Actuarial Tables and your own electronic calculator.</i></p>
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You have been asked to assist a voluntary organisation by providing estimates of its future membership. For many years the number of members was stable, and mainly made up of retired people. However, a publicity drive in 2001 resulted in a large increase in the number of younger members. The organisation expects continued success in recruiting younger members, albeit at a slower rate than in 2001.

Your estimates indicate a stable membership over the period 2002 to 2004. The chairman of the organisation has written to you expressing surprise at your findings. He suggests that the increased recruitment should mean that the size of the organisation will continue to grow, particularly because the younger members are less likely to die. He has asked you to explain how you arrived at your estimates, and why you are not forecasting a significant continuing increase in membership.

A summary of key information from your calculations is given below (the chairman does not have this).

Draft a letter replying to the chairman in about 500 words.

Forecast membership

<i>Year</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>
Members at start					
Age 65 and over	5,000	5,000	5,000	5,000	5,000
Under age 65	2,500	2,500	5,000	5,000	5,000
Total	7,500	7,500	10,000	10,000	10,000
Assumed recruitment					
Age 65 and over	300	300	300	300	300
Under age 65	500	3,000	900	900	900
Assumed deaths					
Age 65 and over	150	150	150	150	150
Under age 65	0	0	0	0	0
Assumed lapses					
Age 65 and over	250	250	250	250	250
Under age 65	400	400	800	800	800
Members reaching age 65	100	100	100	100	100
Members at end					
Age 65 and over	5,000	5,000	5,000	5,000	5,000
Under age 65	2,500	5,000	5,000	5,000	5,000
Total	7,500	10,000	10,000	10,000	10,000

Your underlying assumptions are:

	<i>Mortality rate</i>	<i>Lapse rate</i>
Members under 65	Negligible — assumed 0	16%
Members over 65	3%	5%

The number of members reaching 65 is expected to remain at 100 a year for the foreseeable future.

Notes:

1. You can assume that new members will not lapse their membership in the year of joining.
2. You should accept that the assumptions shown are reasonable, and should not attempt to justify them in detail.
3. You should assume that there are no reasons for changes in membership other than those covered by the assumptions.
4. You are not asked to comment on recruitment policy of the organisation, or anything else beyond your estimates.