

INSTITUTE AND FACULTY OF ACTUARIES

PAST EXAM

Subject CA3 – Communications

(Written)

Scenario: XYZ Pension Scheme

Time allowed: 1 hour 30 minutes plus 15 minutes' reading time

You have recently joined a firm of consulting actuaries advising pension schemes on funding matters. You have been assigned to the team looking after the XYZ pension scheme and you report directly to your manager who is the actuary in charge of the XYZ account. Your team has just completed the valuation of the XYZ pension scheme and produced a draft report showing the results, including the balance sheet of assets and liabilities, which your manager has recently sent to the Chairman of the scheme's Trustees.

The Chairman has read the draft report and after a brief telephone conversation with your manager has now written to her as follows:

Dear Jenny

Many thanks again for the valuation report for the XYZ scheme. I note that the scheme's funding level is just over 100% and that you are expecting this to remain at 100% for the foreseeable future if all the assumptions are borne out in practice. Though this is good news for the scheme, I am a little worried about the possibility of the funding level falling below 100% in the near future and how far it might fall. I would be interested to know how we could investigate this further.

I am particularly interested in whether you could model the results and give the trustees an idea of how likely it is that the scheme's funding level could deteriorate over, say, the next ten years. As I mentioned when we spoke, I have heard about such things as "stochastic models" and would be very interested if you could give me some more information on this, in particular how they work and whether such a model would be useful for the XYZ scheme.

As you are aware the trustees are meeting next week and I look forward to seeing you there. Perhaps you could provide me with some information on stochastic models to be attached as a paper to the agenda for this meeting?

I look forward to hearing from you.

Kind Regards

Joan Jones

Your manager is currently out of the office but has written you the following instructions:

Julie

As you can see from Joan's note she is interested in how a stochastic model could be used to help predict the chances of the XYZ scheme being underfunded during the next ten years. I would be grateful if you could draft for me a paper to be included in the agenda for the next trustee meeting. Points I think you should include are:

- *What is a stochastic model and how it differs from the "traditional" deterministic model we've used for the XYZ valuation? The key issues I think you should cover are the use of probability distributions to model assumptions and the fact that we can build in correlation between key assumptions. As these are technical concepts, I'd suggest you explain them using a simple example the trustees are likely to understand such as when investment returns are low we expect a higher rate of withdrawal from the scheme or when inflation is high we expect salary increases to be high.*
- *What are the outputs and benefits of a stochastic model, i.e. the distribution of funding levels over the next ten years? Give a simple example of the sort of output the trustees would be interested in (such as an x% probability that the funding level is less than y% over n years)*
- *What are the risks? You'll need to include some warnings about models only being as good as the parameters built in and the usual health warnings about relying on complicated models to model real life.*

You'll need to explain all this in fairly simple terms as some of the trustees, though businessmen, will find this a technically difficult concept to understand. I would also keep your paper short – around 500 to 550 words.

Many thanks

Jenny

Draft the paper for your manager.

END OF PAPER