INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

18 September 2019 (pm)

Subject CP1 – Actuarial Practice
Paper Two

Time allowed: Three hours and fifteen minutes

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*

2. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*

3. *You have 45 minutes of planning time before the start of this examination. You may make separate notes or write on the exam paper but not in your answer booklet. Calculators are not to be used during the reading time. You will then have two hours and 30 minutes to complete the paper.*

4. *Mark allocations are shown in brackets.*

5. *Attempt all questions, begin your answer to each question on a new page.*

6. *Candidates should show calculations where this is appropriate.*

Graph paper is NOT required for this paper.

AT THE END OF THE EXAMINATION

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

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.

Note: your work needs to link to the information provided in the questions and should discuss/ outline areas of professionalism/actuarial advice as required. Limited credit will be given to solutions where generic answers have been given that do not refer back to the information provided.

1 **Background**

XYZ is a general insurance company in a developed country, specialising in motor insurance. It has been one of the market leaders by market share for ten years. However, it has not made a profit in the last two years.

An overseas insurance company, ABC Corporation ('ABC'), is looking to purchase XYZ and has been provided with the following information:

Motor insurance results

An initial analysis of XYZ's claims experience shows that overall, claim numbers over the last two years have increased by 20%. In particular, there has been a significant increase in claims connected to car and motorcycle accidents.

Company retirement benefit schemes

XYZ has two retirement benefit schemes: a defined benefit scheme and a defined contribution scheme. Five years ago the defined benefit scheme closed to future service. Members of that scheme joined the defined contribution scheme in respect of future service.

Three years ago, XYZ agreed to make annual payments into the defined benefit scheme for the following ten years to eliminate the funding deficit. However, recent results suggest that the deficit has increased, indicating that XYZ may be required to increase its payments into the defined benefit scheme.

The defined contribution scheme is a with-profits policy managed by a life insurance company which provides investment and administration services. The policy guarantees a minimum investment return of 3% p.a. on funds invested before retirement. XYZ matches employee contributions into the scheme up to a maximum of 5% of salary.

Other information

You have also been provided with the following information:

- XYZ ran a promotional campaign last year to increase the number of motor insurance policies sold to young people between the ages of 18 and 24.
- From next year, the government is introducing legislation which will require all pension scheme funding deficits to be eliminated within five years.

Questions

(i) Set out the reasons why ABC may wish to purchase XYZ. [5]

(ii) Describe, using examples, how XYZ can manage and control its risks in connection with its motor insurance policies. [10]

(iii) Set out possible reasons for the worsening of the funding position in the defined benefit scheme. [10]

(iv) Discuss potential options available to improve the funding position of the defined benefit scheme. [8]

(v) Discuss the key risks of the defined contribution pension scheme. In your answer you should comment on each risk from the perspective of XYZ and the scheme members. [7]
[Total 40]

2 Background

LifeCo insurance company sells only immediate whole single life annuities and has total liabilities of £13bn. Currently LifeCo has £15bn of assets invested mainly in corporate bonds.

LifeCo is seeking to improve the risk adjusted investment returns from its assets by investing in long-term illiquid assets. Currently LifeCo directly manages all of its assets. LifeCo has proposed to invest up to £1bn in commercial mortgage loans. Under a commercial mortgage loan money is lent to a special purpose company that owns one or more properties that provides collateral for the loan. The income after expenses produced by the one or more properties of the special purpose company funds the loan payments. Three examples of potential commercial mortgage loans are set out below:

(a) **Commercial mortgage loan:** £60m loan, ten-year term, coupon rate 5% p.a.; with the principal repayable as a lump sum at the end of the term.
Property: Large office located near a small town. The property is leased to Company R. It is currently valued at £80m with a current yield of 6% p.a. When the property was constructed it won a number of awards for its design and architecture.
Lease: 14-year fixed lease to Company R with AA credit rating. There are no break clauses in the lease, the company is required to pay rent for the whole term of the lease. Company R is responsible for all taxes, repairs, maintenance and insurances in respect of the property.
Other information: Company R has three offices in total, each in different locations. Company R has experienced challenges in recruiting and retaining employees at this office. Average salaries are significantly higher at this office compared with its other offices.

(b) **Commercial mortgage loan:** 40% share of £100m loan, ten-year term, coupon rate 5% p.a.; with the principal repayable as a lump sum at the end of the term.
Property: Large office located centrally in a major city is leased to Company S. It is currently valued at £200m with an annual yield of 5% p.a.
Lease: 12-year lease has upwards only rent reviews which occur every four years. Company S has a BBB credit rating. There are no break clauses in the lease, the company is required to pay rent for the whole term of the lease. Company S is responsible for all taxes, repairs, maintenance and insurances in respect of the property.
Other information: This office is Company S's headquarters. The special purpose company owning the property has been set up with an initial £15m cash balance. The owner of the special purpose company is restricted from withdrawing any money that would reduce the cash balance below £20m.

(c) **Commercial mortgage loan:** £40m loan, 15-year term, coupon rate 7% p.a. with the principal repayable during the term which, together with the coupons, gives rise to level payments throughout the term.
Property: A site with three large distribution warehouses located adjacent to a rail freight station and a key intersection for several major roads. The site is currently valued at £100m with a current annual yield of 9% p.a. The warehouses are leased separately to Companies T, V and W.
Lease: All three companies have 15-year fixed leases. There are no break clauses in the leases, the companies are required to pay rent for the whole term of their leases. The companies are responsible for all taxes, repairs, maintenance and insurances in respect of their individual warehouse. Company T has a credit rating of A, Company V has a credit rating of BBB and Company W has a credit rating of BB.
Other information: As part of the project to evaluate the proposition to invest into commercial mortgage loans, LifeCo will analyse whether to directly manage the investments or to contract a third-party investment manager.

Questions

(i) Outline the project stages to evaluate the proposal to invest in commercial mortgage loans. [5]

(ii) Identify the risks for commercial mortgage loans in general. [15]

(iii) Identify the stakeholders or other professionals that would need to be involved in reviewing the risks identified in part (ii), indicating the relevance of each. [7]

(iv) Discuss the skills and experience required to invest in commercial mortgage loans, taking into account the stakeholders and other professionals in part (iii). [11]

(v) Discuss the relative merits to LifeCo of using a third-party investment manager, compared to managing the investments directly. [6]

(vi) Assess the suitability of each of the three example commercial mortgage loans for inclusion in an investment portfolio to back LifeCo's annuity liabilities. [16]
[Total 60]

END OF PAPER