INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

20 September 2018 (pm)

Subject SA1 – Health and Care
Specialist Applications

Time allowed: Three hours

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 15 minutes of planning and reading 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 three hours to complete the paper.*

4. *Mark allocations are shown in brackets.*

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

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

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.

1 A health and care insurer writes individual critical illness insurance business. The main product sold by the insurer is a unit-linked regular premium critical illness policy. The principal features of this product are:

- Policyholders select the term at the start of the contract. The term must be of at least 10 years' duration but must end on or before the policyholder's 65th birthday.
- The benefit is a fixed sum assured payable on death or earlier diagnosis of one of the diseases listed in the product terms and conditions.
- On the 10th policy anniversary and each subsequent 10th anniversary there is a guaranteed insurability option where the policyholder can increase the sum assured by 25% for an equivalent proportionate increase in premium, without being subject to further underwriting.
- Premiums are payable monthly and 95% of each premium is invested in a range of unit-linked funds.
- An annual management charge of 1% is levied on each unit-linked fund. In addition, a monthly critical illness risk charge is deducted from the unit fund.
- On surrender within the first three years the policyholder receives no benefit. On surrender after three years, the policyholder receives the accumulated value of the units to date.

(i) Describe how the critical illness policy outlined above meets the needs of the customer. [5]

(ii) Outline the main risks associated with this product, from the viewpoint of the insurer. [8]

The Solvency II regulatory framework applies in the country in which the insurer writes its critical illness business.

(iii) Describe how the Best Estimate Liability for the product would be calculated. [10]

(iv) Describe how the Risk Margin would be calculated for this product (it is not necessary to describe the Solvency Capital Requirement calculation). [6]

The health and care insurer also writes the full range of healthcare products. The insurer has noted that its overall Risk Margin has increased by 10% since the previous year.

(v) Suggest reasons why this has occurred. [5]
[Total 34]

2 Company XYZ is a fast growing health insurer specialising in writing individual income protection products in its domestic market.

(i) Describe the issues a health and care insurer should consider in developing an appropriate Asset-Liability Management (ALM) strategy. [10]

(ii) Discuss the governance control that the insurer would need to be put in place to ensure an effective ALM strategy. [4]

(iii) Describe the controls that the regulator could implement regarding the investment activities of a health and care insurer. [5]

The health and care insurer has always matched its claims in payment liability using fixed income bonds. Due to the low interest rate environment experienced in the local economy in recent years, investment returns on such assets have been relatively low. The investment manager has proposed investing in infrastructure assets as an alternative asset class.

Having researched the infrastructure assets available in the local market, the investment manager has identified an opportunity to purchase a major toll road for which construction has recently been completed. The toll road was funded by the local government and is now available for investors to purchase. In return for an upfront price, the purchaser will receive regular income through levying charges on motorists using the toll road. The purchaser will have complete control over the level and structure of these charges.

(iv) Set out the factors the insurer needs to consider before making a decision on whether to purchase the toll road as an investment. [9]
[Total 28]

3 Country A has a large number of nursing homes and care homes for its elderly population. These are funded by a mixture of state support and a well developed market for private health and care insurance. Two of the largest providers of these homes are merging and the combined company will operate more than half of all care and nursing homes in the country. A health and care insurer which offers pre-funded and immediate needs Long Term Care Insurance (LTCI) has existing policyholders in homes across the country, including many in the homes that will be run by the merged company.

(i) Discuss the impact the merger may have on the following groups of the health and care insurer's existing policyholders:

(a) Those already receiving care (i.e. all immediate needs and those that had pre-funding policies and are now in care) [7]

(b) The pre-funding policyholders that are not yet receiving care [5]

(ii) Discuss the implications of the merger on new LTCI business written by the health and care insurer. [6]
[Total 18]

4 In country B all residents are required to be covered by a private medical insuurance (PMI) policy because there is no state healthcare provision. There are two insurers providing PMI policies in country B: Everywhere Insurance and Select Insurance. Both insurers are obliged to accept all applications and must offer the same premium to all policyholders in their portfolio, though each insurer's premium may differ.

(i) Describe the consequences for the insurers of having to accept all applicants and charge the same premium for any given time period. [6]

Country B has two hospital networks: Forest Hospitals and Orchard Hospitals. Hospitals within the two networks provide the same services and treatments, irrespective of network. PMI policies from the two insurers offer identical benefits except that Everywhere Insurance provides cover across both hospital networks whilst Select Insurance provides cover only in Orchard Hospitals.

Select Insurance has negotiated with the Orchard Hospitals network so that the hospitals charge 10% less for services provided to people insured with Select Insurance Plc compared to people insured with Everywhere Insurance.

(ii) Discuss the advantages and disadvantages for Orchard Hospitals of entering into such an agreement with Select Insurance. [5]

(iii) Discuss the advantages and disadvantages for Select Insurance of entering into such an agreement with Orchard Hospitals. [6]

(iv) Discuss the advantages and disadvantages for residents of Country B who buy a PMI policy with Select Insurance instead of Everywhere Insurance. [3]

[Total 20]

END OF PAPER