INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

20 September 2018 (pm)

Subject SA5 – Finance 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 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 three hours to complete the paper.*

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

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 school would like to build a new sports field for use by its pupils. The school already owns the necessary land, but needs additional funds to build training facilities. The local authority, which would normally provide funding to the school for capital projects, is in financial difficulties and has defaulted on its existing debt obligations.

(i) List three ways an issuer of debt securities could default on its obligations. [2]

(ii) Outline the two principal models for evaluating a credit derivative. [2]

A sinking fund is a type of bond where part of the issue will be repaid, on a regular basis, before maturity. A large part of the local authority's outstanding debt consists of sinking funds.

(iii) Suggest reasons why the local authority may have used sinking funds in the past. [3]

(iv) Suggest reasons why an investor may want to purchase a sinking fund. [3]

Because of its financial difficulties, the local authority is unable to provide funds to the school for the sports field.

(v) Outline three alternative sources of finance which the school could use for its project, other than a bank loan. [3]

The school has approached its bank for a loan. The bank needs to perform a credit analysis to decide how much to lend and at what interest rate.

(vi) (a) State what the main purpose(s) of a credit analysis is/are.

(b) Describe how the bank could carry out a credit analysis of the school. [5]

During a meeting of the bank's credit rating team, one of the analysts claims that credit analysis is actually more long-term than equity analysis due to insensitivity to short-term successes or failures within the company being evaluated. The other team members are unsure if this statement is true or not.

(vii) Discuss the analyst's statement. [3]

The school decides that the interest rate it would be charged on a bank loan will be too high. Instead, it proposes to enter into a transaction with a property developer whereby the school will sell the land to the developer, who will then be allowed to build residential homes on a section of the land. In return, the developer will build, free of charge, the sports field and the training facilities. The school will be entitled to use the facilities but must pay an annual service charge to the developer.

(viii) Identify the type of transaction which is proposed. [1]

(ix) Explain the impact on the school of entering into this transaction, including the key benefits, key disadvantages and key risks. [5]

[Total 27]

2 A client has approached your firm for financial advice. The client is considering when to retire and wants to know whether she has enough savings to retire, allowing for any adverse events that may happen. The client has never contributed to a pension and has no life insurance. The client has heard that insurance companies use a test called the Solvency II Standard Formula to ensure they have enough assets to be able to meet their liabilities even in an adverse scenario. The client would like your firm to calculate a figure using the same formula for the amount they would need to accumulate in order to retire.

(i) (a) Give four risks from the Standard Formula that may apply to the individual.

(b) Explain why each would be relevant.

[4]

The client realises that the Standard Formula may not be appropriate to assess their risks but has heard that insurers can use an internal model if that is more appropriate. The client has asked whether you could build an equivalent internal model for their own situation.

(ii) List four conditions that need to be met before an internal model could gain approval by a regulator under Solvency II. [2]

(iii) Outline how each of the conditions identified in part (ii) may be met and any issues that may be encountered when building a model for this client. [4]

(iv) Explain two risks that may not be adequately covered under the Standard Formula but which you would expect to see covered in an internal model for this client. [2]

(v) Discuss the advantages and disadvantages of using a risk-based capital approach for this client. [5]

The client now confirms that she has understood the risks but would like to know how she can control these risks.

(vi) Give five techniques for risk control explaining how they may apply to this client. [5]

Your firm suggests that the client would also benefit from considering a disaster plan should a risk crystallise.

(vii) Describe three items on a typical institutional disaster plan that might apply to this client. [3]

[Total 25]

3 A UK utility company intends to develop a wind farm to expand its future power generation capacity. The utility also has substantial operations in continental Europe.

Management is worried about the economic prospects of the UK as a result of the decision to leave the European Union (EU). The company's chief economist has explained that the business environment in which the company operates is likely to be impacted as a result of the UK government's current economic strategy being affected by leaving the EU.

(i) Describe how the main elements of the UK government's economic strategy are likely to be affected by leaving the EU. [3]

(ii) Suggest how leaving the EU could impact the business environment which the company operates in. [3]

The company will need to raise the necessary capital to undertake this project. An investment bank has proposed issuing debt through an asset backed security. The company would have the option to prepay the debt.

(iii) Describe how the proposed asset backed security would be valued, assuming the company is expected to prepay when refinancing rates fall below the loan rate. [4]

(iv) Discuss the main risks of the proposed asset backed security from the perspective of an institutional investor looking to purchase this instrument. [6]

(v) Discuss how the risks identified in part (iv) can be managed. [6]

(vi) Assess the suitability of Value at Risk as a measure of market risk. [3]

(vii) Describe additional measures of market risk that could be used to supplement a Value at Risk analysis. [2]

The company proposes to use an economic capital framework to allocate capital to the UK and European operations.

(viii) Give two possible ways of allocating capital on an economic basis. [2]

[Total 29]

4 InsurePool Ltd is a start-up insurer based in a developing country. InsurePool has applied for a floating rate bank loan in order to finance the purchase of its headquarters. The insurer has had its loan application approved, however its Chief Financial Officer (CFO) is worried about the potential impact of increases in interest rates on the ability of the company to make the loan repayments.

An investment bank has suggested the following instruments to manage the risk of rising interest rates:

- an interest rate cap;
- a floating-for-fixed swap;
- an interest rate collar.

(i) Describe how each of the instruments listed above can be used to mitigate the risk of rising interest rates. [3]

(ii) Outline the advantages and disadvantages of using each of the instruments listed above to mitigate the risk of rising interest rates given the circumstances of InsurePool Ltd. [6]

School education in InsurePool's country is provided by the government and fees payable are linked to LIBOR. If LIBOR increases, school fees increase and if LIBOR decreases, school fees decrease. InsurePool's only product is called EduPlan and this product provides a top-up payment to the customer whenever that customer's school fees exceed a specified level.

InsurePool is considering how to value its liabilities for EduPlan. The company realises that this liability has similarities with an interest rate swap.

(iii) Suggest how the company could value its liabilities. [5]

One of the bond investors in InsurePool is concerned that the company will not sell large volumes of EduPlan and as a result will struggle to meet repayments on its outstanding debt. InsurePool has suggested two options to give him greater comfort with his holding:

- the company could provide collateral;
- the company could sell the investor a credit default swap on the company's bond.

(iv) Assess whether either of these alternatives would be suitable for reducing the risk borne by the investor. [3]

At a subsequent shareholders' meeting, one of the shareholders complains to management that the company's potential growth rate is being restricted because the company has insufficient financial slack.

(v) Discuss the shareholder's comment. [2]

[Total 19]

END OF PAPER