INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

18 September 2018 (am)

Subject ST4 – Pensions and other Benefits
Specialist Technical

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 six 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 The trustees of a large defined benefit pension scheme, which is open to future benefit accrual, have instructed their actuary to carry out a funding valuation of the scheme. Pension increases are in line with price inflation. The pension scheme's assets are currently invested 60% in equities and 40% in bonds.

(i) Set out the information the actuary will need to carry out the valuation (in addition to member data). [6]

(ii) List the financial and demographic assumptions the actuary will need to make. [4]

(iii) Explain how each of the assumptions in part (ii) may be derived. [12]

(iv) Outline the considerations to be made when determining the valuation basis. [4]
[Total 26]

2 (i) Set out the key risks and uncertainties of defined benefit and defined contribution pension schemes. [6]

(ii) Suggest possible ways in which the risks in part (i) could be mitigated. [6]

A large company is about to set up a new defined contribution pension scheme.

(iii) Set out the key aspects of the defined contribution pension scheme design that need to be considered. [6]

The defined contribution pension scheme will provide a guarantee that the investment returns on members' funds before retirement will not fall below 0%.

(iv) Outline the design considerations involved in offering the investment guarantee. [3]
[Total 21]

3 The managers of a defined benefit pension scheme are reviewing the terms they offer to members who opt to transfer their benefits out of the scheme.

(i) Set out the principles involved in calculating individual transfer values. [3]

A scheme member has just received a transfer value quotation.

(ii) Outline the reasons why the member may decide to take the transfer value. [3]

(iii) Outline the risks the member should consider before taking the transfer value. [3]
[Total 9]

4 A large defined benefit pension scheme is closed to future benefit accrual. The scheme's managers are investigating how to reduce risk.

(i) Describe how a liability driven investment (LDI) strategy may reduce investment risk. [4]

In order to reduce longevity risk, the scheme managers are looking at purchasing annuity policies or using longevity swaps.

(ii) Outline the advantages and disadvantages of purchasing annuity policies. [10]

(iii) Explain how longevity swaps could mitigate the longevity risk. [4]
[Total 18]

5 (i) Outline five methods which could be used to assess employer covenant, stating an advantage and disadvantage of each. [10]

The trustees of a large defined benefit pension scheme, which has a funding deficit, have recently undertaken an assessment of the sponsoring employer's covenant. The results show that the scheme's funding deficit is financially unmanageable given the employer's resources and it is unlikely the deficit will be removed within an appropriate timescale.

(ii) Set out the actions the trustees could take. [4]
[Total 14]

6 (i) Outline the key features that are common to all funding methods that model future benefit outgo and contribution income for a defined benefit pension scheme. [3]

(ii) Describe four funding methods that may be used to set the contribution rate for defined benefit schemes that are funded in advance by regular contributions. [6]

(iii) Recommend, with reasons, which funding method should be chosen for a small defined benefit pension scheme that is closed to new entrants. [3]
[Total 12]

END OF PAPER