INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

27 April 2017 (pm)

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 (i) Outline the benefits that can be provided to members of a defined contribution pension scheme. [4]

(ii) Compare the financial risks of a defined contribution pension scheme with those of a defined benefit pension scheme for:

(a) a member and
(b) an employer.

[7]

A company sponsoring a non-contributory defined benefit pension scheme has decided to amend the scheme to provide benefits on a defined contribution basis for future service.

The benefits payable for service prior to the date of amendment are set out below:

Normal Pension Age (NPA)	60
Accrual rate	1/60ths of Final Pensionable Salary for each year of pensionable service
Commutation at NPA	Maximum of 20% of member's pension with each £1 p.a. of pension providing £12 of cash
Final Pensionable Salary	Average of basic pay at 1 April for the three year period prior to leaving
Pension increases in payment	3% p.a.
Spouse's pension on death before NPA	1/3rd of basic pay on 1 April prior to death
Lump sum on death before NPA	5 times basic pay on 1 April prior to death
Spouse's pension on death after NPA	50% of member's pension at date of death

An extract of the minutes of the company board meeting where the decision was taken is as follows:

"The company's objective is to reduce the financial risks associated with the current pension scheme, and to offer a replacement scheme having the same expected long term cost for future service."

(iii) Calculate the rate (as a percentage of basic pay) at which the company will need to contribute to the defined contribution scheme in order to try to achieve this objective. State the assumptions you have made and show your workings. [8]

(iv) Discuss why the cost of the new pension benefits might differ from the cost of the current scheme, assuming that the company pays contributions at the rate calculated in part (iii). [6]
[Total 25]

2 (i) List four different situations in which pension rights can be converted to a cash sum under a trust based defined benefit pension scheme. [2]

The trustees of the above scheme are reviewing the terms upon which a member can convert their pension rights to a cash sum to ensure they are consistent in all situations. In particular, they are considering whether to set the same conversion terms for cash commutation at retirement and transfer value payments prior to retirement.

(ii) Outline the underlying principles that the trustees should consider when determining the approach to adopt for:

(a) cash commutation factors.
(b) transfer values. [16]

(iii) Discuss the implications for the scheme and the member if the trustees decide to set the same conversion terms for cash commutation and transfer values. [7]
[Total 25]

3 A company is reviewing the pension benefits offered to current staff. It currently operates a defined benefit pension scheme and would like to offer a scheme that shares risk between the company and the member (a defined ambition scheme).

(i) List eight types of defined ambition scheme that are more defined benefit in nature, and four types of defined ambition scheme that are more defined contribution in nature. [6]

(ii) Comment on the effectiveness of each type of defined ambition scheme listed in part (i) in mitigating the following risks to the sponsor:

(a) increased longevity
(b) high salary inflation

[14]
[Total 20]

4 (i) List the benefits that can be offered to individuals by the State. [6]

The government of a country is considering offering life assurance benefits to the entire adult population.

(ii) Compare the effectiveness of the State and the employer as a potential provider of these benefits. [4]
[Total 10]

5 A trust based defined benefit pension scheme which is closed to future accrual is fully funded on a self-sufficiency basis. The trustees have decided to continue to operate the scheme in the long term (continuing to fund it on this basis) instead of taking steps to secure the benefits with an insurance company.

(i) Explain what is meant by a self-sufficiency basis. [2]

(ii) Outline why the trustees of the scheme may have taken this decision. [4]

(iii) Set out the risks to the member of the trustees continuing to operate the scheme on a self-sufficiency basis. [4]
[Total 10]

6 An actuary to a very large defined benefit pension scheme has undertaken a review of the mortality experience of the pensioner members over the previous year. A scheme manager has suggested that the mortality assumption for the forthcoming actuarial valuation should be set in accordance with the crude rates underlying this experience.

(i) Outline the reasons why this may not be a suitable proposal. [4]

(ii) Suggest how the proposal could be adapted to provide a more reliable mortality assumption. [6]
[Total 10]

END OF PAPER