

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

14th November 2008

Subject CA1 – Core Application Concept (Paper I)

Time allowed: 3 Hours (9.45* - 13.00Hrs)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. Please read the instructions on the front page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception
2. Attempt all questions, beginning your answer to each question on a separate sheet.
3. 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 3 hours to complete the paper.
4. You must not start writing your answers until instructed to do so by the Supervisor.
5. Mark allocations are shown in brackets.

AT THE END OF THE EXAMINATION

Please return your answer book and this question paper to the supervisor separately.

- Q. 1)** For money market instruments:
- a) Outline the principal characteristics (3)
 - b) Describe how the money market operates. (2)
- [5]**
- Q. 2)**
- a) Define two commonly used tools used to determine the riskiness of an asset portfolio. (3)
 - b) Describe typical stress tests that management might carry out on a commercial bank which writes sizable mortgage business. (2)
- [5]**
- Q. 3)** The three yearly valuation of a defined benefit scheme has just been completed. A large surplus has emerged, which has arisen from two sources:
- Better investment performance than the assumption made in the last valuation
 - Withdrawal surpluses –numbers of early leavers was significantly higher than assumed in last valuation
- a) Outline the various options available to the sponsor of the defined benefit scheme to utilize this surplus. (3)
 - b) List other factors the trustees need to consider before acting on one of these options. (2)
- [5]**
- Q. 4)** A friend has recently established a Medical Research and Development centre. His operation currently has a staff of 50 people and he expects the operations to double in one year. He has asked you for some advice as to the types of insurance that he might need. Describe briefly the types that he might need, including your reasons for suggesting them. (6)
- Q. 5)** You are an actuary with a life insurance company.
- a) Outline the principles that you should follow when providing advice to the company. (4)
 - b) If you are also a director of the company what additional points need to be considered when providing advice and making decisions. (2)
- [6]**
- Q. 6)** In a particular country, there is a State unemployment benefit to which all employed members of the population are entitled. A benefit of 50% of last gross salary drawn is paid by the State in the event of unemployment for more than 2 months. The benefit is payable monthly for a maximum of 2 years from the date of unemployment.
- a) Describe how the State controls and manages the cost of this benefit. (3)
 - b) Explain what actions the State might take to reduce the total cost of such a scheme. (3)
- [6]**
- Q. 7)** A company to raise additional finance has decided to issue a new convertible loan stock (ie a loan stock that can be converted into equity shares in the future). The loan stock can be converted into equity after 5 years from the date of issue or the loan stock can be redeemed at its face value.
- a) What macroeconomic factors will affect the value of the convertible loan stock after issue? (4)
 - b) What factors will affect your decision as to whether or not to subscribe to the issue? (4)
- [8]**

- Q. 8)** A life insurance company is considering setting up a new line of business- micro credit insurance, where the life cover can vary from Rs 5,000 to Rs 50,000.
- a) (i) Describe what capital will be required for in the support of this new line of business. (3)
 - (ii) Explain how this capital will be modeled. (1)
 - b) List the principal experience assumptions that may be needed for the model in part (a). (4)
- [8]**
- Q. 9)**
- a) Describe the interests of leaseholders and freeholders in the context of property investment. (3)
 - b) Give a general formula for valuing freehold property stating the assumptions made. (3)
 - c) A large expanding fund has significant investments in property through high quality leasehold office investments. The fund is looking at diversifying its property investments by purchasing freehold shop investments. These shops are of high quality and in prime sites. Compare the two types of property investments. (7)
- [13]**
- Q.10)** A unlisted television channel owns the broadcasting rights for telecast of all matches held under a Cricket Premier League. The television channel has now decided to hive of this venture into a separate company and has approached an institutional investor to take up 49% of the shares in the new company.
- a) Suggest reasons why the television channel would have decided to offer the shares of the new company to an institutional investor. (5)
 - b) Give reasons why the institutional investor may wish to invest. (5)
 - c) Explain specific features of the television channel's financials statements that the investor should consider before investing. (6)
- [16]**
- Q.11)** A life insurance company launched a conventional regular premium without profits critical illness contract ten years ago. The contract has the following features-
- Under the contract 50% of the sum assured is payable immediately on being diagnosed with a critical illness as set out in the policy terms and conditions. The balance 50% is payable on death of the life assured during the policy
 - No benefit is payable on lapse.
 - Premiums and policy terms and conditions are reviewable every 5 years
- The company is about to review the profitability of the in force block of business.
- a) Explain the claim experience studies that a company would carry out since the launch of the product. (9)
 - b) Describe how the company would use the results of this analysis to set assumptions for assessing the profitability of the business. (4)
 - c) Explain why in review of existing premium rates the results of this analysis may not be relevant. (9)
- [22]**
