

INSTITUTE OF ACTUARIES OF INDIA
EXAMINATIONS

08th November 2007

Subject CA1 – Core Applications Concepts
Paper I

Time allowed: Three Hours (09.45 - 13.00 Hrs)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATE

- 1. 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.*
- 2. You must not start writing your answers until instructed to do so by the supervisor.*
- 3. The answers are not expected to be any country or jurisdiction specific. However, if examples/illustrations are required for any answer, the country or jurisdiction from which they are drawn should be mentioned.*
- 4. Mark allocations are shown in brackets.*
- 5. Attempt all questions, beginning your answer to each question on a separate sheet.*
- 6. Fasten your answer sheets together in numerical order of questions. This, you may complete immediately after expiry of the examination time.*

Professional Conduct:

“It is brought to your notice that in accordance with provisions contained in the Professional Conduct Standards, If any candidate is found copying or involved in any other form of malpractice, during or in connection with the examination, Disciplinary action will be taken against the candidate which may include expulsion or suspension from the membership of ASI.”

Candidates are advised that a reasonable standard of handwriting legibility is expected by the examiners and that candidates may be penalized if undue effort is required by the examiners to interpret scripts.

AT THE END OF THE EXAMINATION

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

- Q. 1)** A life insurance company that sells without profit term assurance product through its own sales force now wishes to sell via the Internet.

Outline why the existing product premium and terms cannot be offered for sale through this new channel.

[5]

- Q. 2)**

- a)** Explain why supervisory authorities require financial providers to maintain a specified level of solvency capital. (2)

- b)** Discuss the relationship between the strength of the supervisory provisions for individual contracts and the level of solvency capital required. (2)

[4]

- Q. 3)** A general insurance company that writes commercial property insurance business wants to purchase excess of loss reinsurance protection to reduce the overall variability of its claims experience. You have been asked to recommend an appropriate reinsurance structure (limit, deductible etc). For accomplishing this job you decide to build a liability model.

State the major requirements from the model which would enable you to decide on the appropriate reinsurance strategy. (3)

State the other factors that the insurance company needs to consider before deciding to purchase the reinsurance. (5)

[8]

- Q. 4)**

- a)** What is meant by the real yield gap? Develop a relationship to explain the circumstances under which the level of the real yield gap may be larger than usual and list those circumstances. (4)

- b)** Consider an investor with the following views:

- equity risk premium = 3.5%
- real future dividend growth = 1.5%
- gross dividend yield = 4.5%
- real yield on index-linked government bonds = 3%
- real yield on index-linked corporate bonds = 4%
- default risk premium on index-linked corporate bonds = 1.5%
- expected future inflation = 2.5%

Which investment class will the investor choose to purchase – equities or index-linked bonds? (2)

[6]

- Q. 5)**
- a) Describe the generalized dividend discount model used to derive the value of an equity share. Derive a simplified model from the generalized model. Explain all symbols that you use. (3)
- b) State the factors that you will consider while assessing the value of shares of a new consumer goods retailer which is yet to declare dividends? (4)
[7]
- Q. 6)** The marketing head of your pension products sees potential in the unit linked deferred annuity market space in terms of providing professional investment advice. He believes many customers lack the knowledge and expertise to choose the best funds to be invested in during the deferment phase prior to retirement. He recommends that the company consider offering a lifestyle investment option which is to be marketed as being broadly suitable for a wide range of customers. The investments under the lifestyle option will change during the life of the policy, ie as the customer moves towards retirement.
- Describe the considerations that you think need to be taken into account in determining the investments that will make up the lifestyle option. [8]
- Q. 7)** What are the main economic and other factors affecting the overall supply of:
- (a) Industrial property (2)
- (b) Index-linked government bonds (2)
- (c) Equities (3)
- (d) Futures (1)
[8]
- Q. 8)** Explain the importance of relevant, accurate data for a general insurance company underwriting private motor insurance. [8]
- Q. 9)**
- a) A large UK institutional investor has for some years directly invested a proportion of its money in developed markets. One of the company directors has said that the money would be better invested in emerging markets.
- Discuss the major issues arising from this proposal. (6)
- b) Another company director opines that investment in domestic companies with exposures to overseas developing markets will provide similar benefits as investing directly in the developing markets. Comment on this statement. (4)
[10]

- Q. 10)** Outline the issues you would need to consider in developing an investment strategy for each of the following investors:
- a) Contributions to a personal pension plan fund
 - b) The reserves of a general insurance company which specializes in all types of liability insurance.
 - c) The free assets of a rapidly growing life insurance company that has just raised a large sum through a rights issue
 - d) Rs 50 lac received as lump sum by a recently retired person who does not have any other savings other than the house he lives in.
 - e) A charity

[15]

- Q. 11)** The Government of a developing country (with a population of 50 million) wants to encourage life insurance amongst the socially and economically backward groups.

It is examining 2 proposals which are -

Proposal A: Providing a fixed amount on the death of the bread winner in the family. The cost of the same shall be borne by imposing a special tax on income which shall be reviewed once every 5 years. The scheme shall be administered by the State.

Proposal B: Mandate Private Life Insurance companies to sell life cover to the economically and socially backward groups by requiring them to sell 10% of the total policies (by number) in a year to this section of the population. The premium rate per mille shall be fixed by State (independent of age) and shall be paid by the State. The rate per mille shall be reviewed by the State once every 5 years.

- a) (i) Outline why the State would consider providing insurance benefit to this group.
(ii) Outline what factors should be considered in determining the level of benefits that the State should consider providing. (4)
- b) Outline what the main areas of risk that arise from Proposal A. (6)
- c) Explain the major advantages and disadvantages of Proposal B compared to Proposal A as far as the State is concerned. (4)
- d) Outline the main areas of risk in Proposal B for the private life insurance companies. (4)
- e) Suggest modifications to Proposal B which would reduce the risk for the life insurance companies. (3)

[21]
