INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

26th April 2016

Subject CA1 – Actuarial Risk Management (Paper I)

Time allowed: 3 Hours (14.45* - 18.00 Hrs)

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 you are required 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.*
6. *Please check if you have received complete Question Paper and no page is missing. If so kindly get new set of Question Paper from the Invigilator*

AT THE END OF THE EXAMINATION
Please return your answer book and this question paper to the supervisor separately.

Q. 1) **i)** Define tactical asset allocation and outline the factors to consider while making a tactical asset switch. (3)

ii) Which liabilities should be considered by the investment manager while determining his investment strategy- liabilities derived using realistic basis or statutory basis? (2)

[5]

Q. 2) **i)** List the rating factors that could be used to price private motor insurance policy. (3)

ii) A company is planning to introduce long term single premium motor insurance policy for a policy term of 3 years. Discuss the additional factors that need to be taken into account while setting the premium rates. (4)

[7]

Q. 3) **i)** Describe the principal economic factors which influence bond yields (6)

ii) Discuss the comment “Equity is the best investment when invested for long term”. (5)

[11]

Q. 4) A large IT company provides a defined benefit pension scheme to its employees. An employee is eligible to receive defined benefits on retirement only if he/she has completed a minimum of 5 years of service with the company. The retirement benefits are based on final salary and length of service in the company. The benefit is also payable on early retirement on grounds of ill health/death whilst still employed with the company.

i) Why would the company offer such a defined pension scheme? (2)

ii) List the various assumptions needed to value the scheme. (4)

iii) Outline the risks to the employer and employees from the scheme. (6)

[12]

Q. 5) **i)** You are an investment expert advising clients on personal investments. Outline the factors you shall consider while providing advice to a professional in his twenties who has just started his professional career. (5)

ii) A large investment company, which has till now not invested in properties directly or indirectly, intends to start a property unit trust fund. Discuss the factors to consider in finalizing the following aspects of the fund’s investment strategy:

- The range of the property assets it should invest in.
- The proportion of the fund that should be held in liquid assets. (8)

[13]

Q. 6) An established power company in Mumbai intends to install a solar power plant in Rajasthan for generation and transmission of power to various states.

i) Outline the information that would be needed to calculate the NPV for this project. (6)

ii) If the project is proven to be financially viable as per (i) above, discuss the other factors that should be considered before deciding on whether to go ahead with this project. (7)

[13]

Q. 7) **i)** Outline the difference between forwards and futures. (3)

ii) Outline why investment funds may use derivatives. (3)

iii) A large investment company, intends to offer the following five-year product:

An investor has to make an initial lump sum investment. At the end of 5 years, the company would pay an amount equal to the initial lump sum increased in line with 95% growth of a local stock market index comprising 50 shares, subject to the amount being at least equal to the initial lump sum invested.

a) Outline two different investment strategies the investment company may adopt to meet the inherent guarantee. (4)

b) From the perspective of the investor and the investment company comment on the different financial risks relating to the above product. (9)

[19]

Q. 8) A medium sized general insurance company primarily writing comprehensive motor insurance and commercial property insurance, has its investments in short term and long-term fixed interest bonds, property and equity. Short term bonds constitute 40%, property investments 10% and equity investments 15% of the total assets and the balance is in long term bonds. The country is facing economic downturn over the last few months leading to fall in equity and property markets accompanied by rise in interest rates. Further, there has been a natural calamity in a particular region of the country leading to a significant one-off hit to the company through claims on both its motor and property portfolio.

The company is struggling to maintain its statutory solvency ratio. All assets under the solvency margin regime are measured on market value basis/realizable value basis.

i) Discuss the various measures that the company could take in the short term to maintain its statutory solvency ratio and the impact of these actions on company’s financials. (10)

ii) Outline the actions that the company could take in the medium to long term to strengthen its solvency position. (5)

iii) The company is planning to review the current reinsurance arrangements on its property portfolio. Discuss the factors to be taken into consideration while reviewing the same. (5)

[20]

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