

# INSTITUTE OF ACTUARIES OF INDIA

## EXAMINATIONS

**03<sup>rd</sup> May 2016**

**Subject SA6 – Investment**

**Time allowed: Three 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. \* 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 three hours to complete the paper.*
- 3. You must not start writing your answers in the answer sheet until instructed to do so by the supervisor.*
- 4. The answers are expected to be India Specific application for the syllabus and corresponding core reading. However, substantially the core reading material is still taken from material supplied by Actuarial Education Company which is meant for UK Fellowship examination. The core reading also contains some material which is India Specific, mostly the IRDA regulation. In view of this, it should be noted that focal point of answers is expected to be India Specific application. However, if application specific to any other country is quoted in the answer the Candidate should answer the question with reference to Indian environment.*
- 5. Attempt all questions, beginning your answer to each question on a separate sheet.*
- 6. Mark allocations are shown in brackets.*
- 7. 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)** You are a newly appointed investment consultant advising the trustees of a large Indian defined benefit pension fund on investment strategy and selection and monitoring of investment managers. You are planning to re-design the investment strategy and are looking to re-assess the performance of fund managers. At the time of their appointment extensive investigations were undertaken to prove their capabilities and suitability. Since then only comparative investment returns and compliance with their individual mandates have been monitored. You recommend that the fund undertakes regular reviews of its fund managers. You are planning to use performance attribution techniques to understand why the fund's performance differed from the benchmark. You are also establishing the risk profile of the fund and have set a target tracking error range for specific active managers along with guidelines on maximum stock, sector, country and region positions.

- i)** Explain how would you perform attribution analysis of an active fund. (4)
- ii)** How does equity attribution differ from debt attribution? (2)
- iii)** Briefly explain the steps in asset allocation process for a pension fund. (4)
- iv)** Why do pension schemes need to undertake an asset liability study? (4)
- v)** Why is it more appropriate to give fund managers a broad tracking error range than a specific target? And what are the concerns? (3)

Having established the risk profile for a fund, you need to ensure that there is a control process in place in order to monitor whether the fund is being managed in line with this profile.

- vi)** What are the key aspects of such a process? (3)

You are considering liability driven benchmarks to closely match the expected liability cash flows of the DB pension schemes and minimise investment risks.

- vii)** What are the limitations of a liability driven benchmark? (4)
- viii)** Compare the following liability driven benchmark options: (16)
  - a)** Market index
  - b)** Immunised bond portfolio
  - c)** Cashflow matching using bonds
  - d)** Cashflow matching using bonds and swaps

An interest rate swap (IRS) is a liquid financial derivative instrument in which two parties agree to exchange interest rate cash flows, based on a specified notional amount from a fixed rate to a floating rate (or vice versa) or from one floating rate to another. The Pension Fund is considering an over-the-counter (OTC) contract between the pension fund and an investment bank.

- ix)** What are the legal and regulatory requirements and challenges for use of swaps in India? (4)
- x)** Explain counterparty risk and collateralization in the use of swaps. (4)

An alternative is insurance buyout where a DB pension scheme can choose to buy out some or all of its liabilities in respect of pensioner members, and in certain situations deferred members, with an insurance company, to reduce or remove investment and mortality risk. The Pension Fund is comparing the insurance buyout route as against the liability driven investment approach above.

- xi)** What are the advantages and disadvantages of going for the insurance buyout route? (4)
- xii)** When is the insurance buyout route more preferable to the liability driven investment approach? (2)

You are considering a complete buyout option with XYZ insurance company, one of the largest private insurance companies in India. XYZ insurance company is rated AAA by CRISIL, a leading credit rating agency in India.

- xiii)** What are the key factors, which a credit rating agency considers for rating of insurance companies? (4)
- xiv)** Why counterparty credit risk is less of an issue for life insurance companies than general insurance companies and what range of approaches are taken into account for credit risk in the context of reserve setting? (4)

A hedge fund is an investment fund open to a limited range of investors that is permitted by regulators to undertake a wider range of investment and trading activities than other investment funds, and that, in general, pays a performance fee to its investment manager. Every hedge fund has its own investment strategy that determines the type of investments and the methods of investment it undertakes. Hedge funds, as a class, invest in a broad range of investments including shares, debt and commodities. Many hedge funds investments in India were facilitated by global investors, borrowing at near zero interest rates in Japan and investing the proceeds in high interest markets like India.

- xv)** Why is India an appropriate market for hedge funds? (3)
- xvi)** What are the advantages and disadvantages of a hedge fund? (3)
- xvii)** Why corporate pension plans find hedge funds to be an attractive investment? (2)

[70]

**Q. 2)** You work in the investment team of a life insurance company and have been entrusted with the task of evaluating alternative asset classes and such investment opportunities in Indian market.

- i)** What is meant by Alternative asset class, please illustrate with examples, the asset classes that fall into this category? (3)
- ii)** Please specify the regulation in respect of the investment that can be made to the alternative asset class for a Life insurance Company (2)

- iii)** Please state with reasons why a life insurance company would want to invest in Alternative asset class. Please elaborate taking into account the suitability of investment with regard to nature of liabilities and fit with other asset classes. (4)
- iv)** The commodities are arguably considered as “Short term Equities”. Please state how commodities can play a significant role in providing diversification from the traditional asset classes like property and equity shares? (6)
- v)** How can a Life Insurance company take exposure to various commodities? i.e. state different ways in which one could invest in commodities. (3)
- vi)** Outline the advantages and disadvantages of the various methods of gaining exposure to commodities as stated above. (6)
- vii)** Assuming no arbitrage argument, express the value of the commodity futures in terms of its spot price. (2)
- viii)** Please explain the terms contango market, convenience yield and backwardation. (4)

**[30]**

\*\*\*\*\*