INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

19th September 2017

Subject SA6 – Investment

Time allowed: Three Hours (14.45* – 18.00 Hours)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. ***Please read the instructions inside the cover 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 a new set of Question paper from the Invigilator.***

AT THE END OF THE EXAMINATION
Please return your answer booklet and this question paper to the supervisor separately. You are not allowed to carry the question paper in any form with you.

Q. 1) Historically the general insurers have been modeling assets and liabilities separately without co-relating them. Due to changes expected in regulations and need for greater public disclosures; the general insurance companies have started to look at doing asset liability matching exercise. The aim of the ALM in general insurance company may be to help in investment decisions or help in capital management. Formulating an investment strategy and choice of assets in relation to the liabilities is becoming increasingly important to general insurance companies.

i) Considering a general insurer operates in varied lines as compared to a life insurer and in various locations, how do the following characteristics of liabilities impact the asset selection and investment strategy of the insurer? Please support your answer with appropriate examples.

a) The nature of existing liabilities (2)

b) Currency of existing liabilities (2)

c) Term of existing liabilities (2)

d) Other factors (2)

ii) What are the different considerations for choosing assets for general insurance business? (4)

iii) How does the inflation impact the investment policy of a general insurer? Please give examples. Please state the asset classes and their cash flows that would match inflation linked liabilities. (4)

iv) Like life insurance companies, the investment policy of a general insurance company too has various risks associated to it. While some factors are same as a life insurance company there are risks like liquidity risk, currency risks etc. that assume more importance in context of a general insurance company. Please list and explain the various financial risks a general insurance company may have with respect to its investment strategy. Support your answer with examples where appropriate. (10)

v) Liquidity risk is arguably one of the main financial risk faced by a general insurer, what factors need to be considered while assessing liquidity risk. (4)

vi) Explain how the liquidity risk for a general insurance company can be measured. (6)

vii) Comment briefly on the suitability of Government bonds and direct property as investments for the following:

a) Meeting claims from household contents insurance.
b) Meeting claims from employers’ liability insurance.
c) Free reserves (*i.e.* shareholders’ funds). (3)

viii) List reasons why in practice the assets held by a general insurer may not be a perfect match for the liabilities. (3)

ix) What is the advantage of making some allowance for future new business in the investment strategy? (2)

x) The company wants to look at the impact of aggressive level of future new business. Please state why this is not recommended. (2)

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Q. 2) A leading Oil Marketing Company, which is a Public Sector Undertaking where the Government has more than 50% stake, has approached your Actuarial firm, through the recommendations of its statutory auditors. They have close to Rs.10,000 crores of assets under management in their exempt PF Fund. Exempt PF represents a Defined Contribution retirement scheme where the returns of the scheme are expected to be no lesser than the rate declared by the Government from time to time. Therefore the scheme has a defined benefit under-pin.

They intend to use the services of a professional fund manager XYZ to manage their investments especially in the wake of changes due to the notification on "Pattern of Investment for EPF exempted establishments" (issued on 9th June 2015 and effective from 29th May 2015). XYZ is one of the leading fund managers in the country and their past track record shows that they have consistently outperformed their peers.

The mandated investment pattern applicable to the exempt PF before and after May 2015 are summarized in the following table:

Instrument	**Investment Pattern of 2008**	**New Investment Pattern (effective May 2015) notified in June 2015**
Government Securities	up to 55%	Minimum 45% and up to 50%
Debt Securities and term deposits of banks	up to 40%	Minimum 35% and up to 45%
Money Market Instruments	up to 5%	up to 5%
Equity and equity related instruments	up to 15%	A Minimum of 5% and up to 15%
Exchange Traded Funds/ Index Funds	No such Category	Exchange Traded Funds, Index Funds and derivatives are part of the a minimum 5% and Up to 15% limit for equity and equity related instruments
Asset Backed Securities, Units of Real Estate / Infrastructure Investment Trusts	0%	Up to 5% limit

i) Outline the plausible reasons for the changes made in the mandated investment pattern from May 2015 (4)

ii) Highlight the nature and type of derivatives permissible under the notification above including a discussion of specific derivative contracts that can be considered by the professional fund manager. (10)

The trustees are keen to understand the concept of Risk Budgeting and have solicit your advice in demystifying the concept.

iii) Describe the aims of Risk Budgeting and outline how you would apply the process of risk budgeting in this context. (10)

The trustees are keen on setting a performance evaluation framework for XYZ and seek inputs from you on the key areas that need to be focused upon in creating a framework.

iv) What are the factors you would consider in setting up a framework for performance measurement for this fund? Specifically mention any risk adjusted measures you would include in this framework? (6)

v) Describe how the option pricing framework can be applied for valuing the interest rate guarantee embedded in the exempt Provident Fund [Option Pricing Formulae are not required to be included as part of your answer to this question] (10)

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Q. 3) You have been appointed as an investment consultant to an Alternative Investment Fund (AIF Category III), as per SEBI guidelines. The fund invests in overseas markets in locations A, B, C and D.

The following information is provided on this fund:

	A	B	C	D	Total
Opening Value (Rs. Crores)	800	600	300	300	2000
Closing Value (Rs. Crores)	880	720	500	300	2400
Local Index Opening	10	10	10	10	
Local Index Closing	11	11.2	10.5	11	
Opening Exchange Rate (Rupees per unit of Foreign Currency)	45	20	25	600	
Closing Exchange Rate (Rupees per unit of Foreign Currency)	50	20	25	540	
Strategic Benchmark (%)	50	20	20	10	100

The fund has a benchmark that is weighted by overseas market locations: 50% A, 20% B, 20% C and 10% D. The benchmark is rebalanced on 31st December each year.

i) Perform an attribution analysis by overseas market locations stating any assumptions that you make. (10)

ii) What would you have expected the results to be if markets were efficient? Comment briefly on the divergence, if any, between what was expected and the results of (i) above. (4)

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