INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

21st March 2018

Subject ST5 – Finance and Investment A

Time allowed: Three Hours (10.15* – 13.30 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 have then three hours to complete the paper.*
3. *You must not start writing your answers in the answer sheet unless instructed to do so by the supervisor.*
4. *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.*
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) Explain asset liability mismatching reserve and how this can be modelled stochastically for a life insurance company. **[5]**

Q. 2) **i)** Explain the need for International Financial Reporting Standards (IFRS). (4)

ii) Briefly describe the requirements of IFRS applicable for institutions trading in investments. (3)

[7]

Q. 3) A friend of yours wants to open a flower bouquet shop for which she intends to borrow from a nationalized bank.

i) Describe the different forms of borrowing available to her. (4)

ii) Discuss the factors which can help her in selecting the best form of borrowing. (4)

She wants to buy an interest rate caplet which caps the six-month rate, starting in a year, at 12% compounding half-yearly on a principal amount of INR 1 crore. The forward rate of interest for the half-year period starting in one year is 10% per annum compounded half-yearly and its volatility is 12% per annum. The risk-free interest rate compounded continuously is 9% per annum.

iii) Calculate the price of this option. (6)

iv) Her financial analyst says that a swaption can also be regarded as a type of bond option. Comment on the analyst's statement. (4)

[18]

Q. 4) You have recently joined as a research analyst in an investment consultancy firm. Your boss has asked you to draft a detailed note on the "top-down" and "bottom-up" approaches in equity portfolio management and their suitability in the context of a Life Insurance Company.

i) Set out the points you would include in your note. (10)

As a next project you have been asked to select between two investment trusts, X and Y, based on their risk adjusted performance. Trusts X and Y manage around 20% and 22%, respectively, of the total pension funds of ABC Company. You have been given the below information on the performance of these two trusts and the index over last 3 years.

	Trust X	Trust Y	Index
Mean return (%)	12	14	10
Beta	0.7	1.2	1
Standard deviation (%)	18	21	30

The mean risk-free return over the last 3 years is 8%.

ii) Which Investment trust would you select. Justify your answer with supporting calculations. (6)

iii) Outline the limitations of such performance measurement. (4)

[20]

Q. 5) In an emerging economy Lotusland Exchange Traded Funds (ETFs) are gaining prominence. Due to proactive policies of the Government the stock market of Lotusland has gone up considerably. A lot of retail money is flowing into various categories of equity ETFs.

i) What are exchange traded funds? (2)

ii) What are the differences between an ETF that tracks an index and an index fund run by an asset management company that tracks the same index? (5)

Lotusland has seen passively managed equity ETFs of various categories outperform active fund managers in the past year. This has led to a lot of money flowing from active funds to passive ETFs several of which are being launched. The regulator has started worrying that humungous growth in ETFs poses significant risks.

iii) What kind of risks does regular and significant fund inflows to ETFs present? (6)

[13]

Q. 6) In an emerging economy of Algaeland, about 5 years ago, the Government introduced securities transaction tax (STT) in lieu of long-term capital gains tax arising out of profit on sale of equity in stock exchanges. In an STT regime the participants paid a small transaction tax on each transaction in the stock market. Algaeland defines long term as one year and the country has been witnessing inflation of about 7% per annum.

i) What are the advantages and disadvantages of an STT regime? (5)

Over the last 5 years the equity markets of Algaeland has risen sharply. The Government's analysis revealed that it has lost a significant amount of revenue as the investors gained capital gains without paying any taxes as they had already paid STT. The Government has now proposed introducing long term capital gains at 10% without indexation benefit. The proposal also suggests that the market price as on the last trading day of the previous month will be taken as cost price for computation of capital gains.

ii) Critique the proposal (5)

The fund manager of a university endowment fund known for taking long term positions in quality equity has suggested that this move can lead to a de-rating of the stock market as investors will hence forth be willing to pay a much lower P/E multiple

iii) With a simple numerical example demonstrate the investor's thought process behind this comment? (4)

An eminent economic thinker has suggested that long term capital gains should not attract any tax as it amounts to multiple taxation

iv) What could be the rationale for this suggestion? (3)

Based on the feedback received for the proposal the Government has said that the long-term capital gains tax will be levied only on gains above a threshold.

v) What could be the rationale for exemption of capital gains up to a threshold? (2)

[19]

Q. 7) In the country of Daisyland equity markets have been rising consistently in the past few years. Recently quite a few general insurance companies have listed and market is primarily valuing it on a price to book value basis

i) What are the factors to be considered when P/BV metric is used? (6)

ii) A general insurance company in the country has a required solvency margin of 25% of net premium and solvency ratio requirement (i.e. ratio of available equity to required solvency margin) of 1.5 times. The company currently has a solvency ratio of 1.6 and earns about 10% on free capital. The insurance profit margin currently is 2%. What is the profit margin needed on the insurance business next year if target growth rate is 20% and solvency ratio should be unaffected. A dividend payout ratio of 30% maybe assumed and taxes can be ignored. Comment on the result. (6)

iii) What are typical behavioral biases exhibited by a mutual fund manager in assessment of probability of an event like a market crash? (6)

[18]

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