# INSTITUTE OF ACTUARIES OF INDIA

## EXAMINATIONS

## 22nd May 2008

# Subject ST5 — Finance and Investment A

Time allowed: Three hours (9.45* pm – 13.00 pm)

### INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer sheet.*

**2.** ** 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.*

**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.** *You must not start writing your answers in the answer sheet until instructed to do so by the supervisor.*

**5.** *Mark allocations are shown in brackets.*

**6.** *Attempt all questions, beginning your answer to each question on a separate sheet.*

**7.** *Candidates should show calculations where this is appropriate.*

**8.** *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 IAI.***

**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.

**In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator.**

**Q. 1)** Briefly discuss the responsibilities of directors of a company. **[6]**

**Q. 2)** A venture capital fund is considering investment in a start up company that proposes to deal with infrastructure projects on build, operate and transfer (BOT) basis . The government is giving encouragement to this sector in various ways such as tax breaks. The start up company will be run by two individuals who propose to invest Rs. 10 Cr. of their own money. They have approached the venture fund to inject another Rs.10 Cr. To date the company has lined up small to medium projects worth about Rs.15 Cr.. The profitability projections for the next 5 years based on their business plan have been submitted by the company to the fund.

(i) Outline the main investment characteristics of a direct venture capital investment in a new company. (3)

(ii) List the issues the venture capital fund should take into consideration prior to deciding to invest as it is considering investment in this sector for the first time. (4)

The fund, having studied the project plan, is considering investing in this company both in equity and debt.

(iii) List the issues the fund should take into account prior to deciding the ratio of debt to equity for its investment. (6)

**[13]**

**Q.3)** As at 31 December 2001, ABC Co. reported a net loss for the second year in succession. As a consequence the board hired a new managing director. Following a review of the company's operations, the managing director closed a number of factories and 30% of the workforce was made redundant. As a result the company returned to profit in 2002. Demand for the company's products grew above expectations in 2003. The company was unable to fully satisfy the demand and business was lost to competitors. As a result in 2003/04 the company has embarked on a large and expensive growth phase including hiring new staff and building new factories. The company was profitable in 2003 but will not be so after expansion costs are taken into account in 2004.

At the annual general meeting in 2004, the managing director made a speech citing the rapid return to profit in 2002 and the increased demand for the company's products in 2003 as major personal and corporate achievements. He has asked the shareholders to support the company's expansion plans and has advised them that it may be necessary for the company to hold a rights issue in the future.

You are an investment manager. Your fund is a major shareholder in ABC Co. You disagree wholly with the managing director s interpretation of events and would like to see him replaced.

(i) Draft a letter to the chairman of the board of ABC Co. calling for the managing director's resignation and citing the reasons why he should go. (6)

(ii) List the data that you would require and outline the analysis that you would conduct to substantiate your assertions. (5)

(iii) Describe the managing director's view of his own performance to date in terms of Behavioral Finance Theory. (4)

**[15]**

**Q.4)** Describe how a cut in interest rates by the central bank is likely to impact the economy **[5]**

**Q.5)** List five active management styles and briefly describe them to bring out the differences in their styles. **[5]**

**Q.6)**

(i) Define the term "risk budgeting" (1)

(ii) Describe the risk budgeting process within the context of an institutional investment portfolio. (4)

**[5]**

**Q.7)** A mutual fund company manages several funds ranging from pure international equities and bonds to pure domestic equities and bonds and a combination. Each of the funds is managed by a fund manager independently. The total assets under management are Rs.10,000 Cr. Fund Manager A manages one fund that invests up to 100% in international equities across the globe with total assets under management of Rs.4000 Cr., with an option to invest up to 25% in domestic equities. Currently the fund is fully invested in international equities. Fund Manager B manages another fund that invests up to a maximum of 25% of total funds in international equities and the balance in domestic equities with total assets under management of Rs.3000 Cr. Since for the past three years as the domestic equities have been providing handsome returns, the fund manager has been fully invested in domestic equities with no investments in international equities.

However in view of the recent volatility in the domestic market the fund manager B has decided to get exposure to international equities. She is considering the following three options for achieving the desired exposure:

1. Using futures markets
2. Using options
3 Undertaking an equity swap with Fund Manager A

(i) List the functions of a clearing house in a futures exchange. (3)

(ii) Explain the margin system and describe how it helps to control counter party credit risk. (4)

(iii) Describe how the fund manager B might achieve international exposure through each of the three routes mentioned above and give the advantages and disadvantages that each route might offer relative to others. (10)

(iv) After having decided to use one of the routes, describe the key items of information the fund manager should include in a regular report to her investors. (3)

**[20]**

**Q.8)**

(i) Explain what risk has crystallized in each of the following cases:

a) a fund manager fails to receive bonds purchased from an investment bank because the investment bank becomes bankrupt after the price is agreed but before the trade is settled

b) a fund manager cannot sell shares into the share market at any price

c) a supermarket fails to receive goods after payment has been made to a farm

(6)

(ii) State four credit events likely to affect a credit default swap. (2)

(iii) A 10 Cr. nominal credit default swap on EFG Co delivers 10 Cr. Nominal traded bonds to the swap holder in the event of a specified credit event by EFG. The swap counterparty may elect to deliver bonds issued by EFG Co or one of EFG Co.s subsidiaries.

An investment bank establishes a short position of 10 Cr. nominal of EFG Co.s bonds with a term to maturity of 5 years. It immediately enters into a 10 Cr. nominal credit default swap as described above and receives a premium.

Outline the risks to the investment bank of this transaction

(7)

**[15]**

**Q.9)** A listed major steel manufacturing company having operations spread across a few countries is contemplating to improve its current rating that has been stable for several years. The company is currently rated AA. It wishes to improve it to AAA.

(i) Outline the four likely reasons for the company to improve its rating. (4)

(ii) Describe the key factors the rating agency will take into account while rating this company. (6)

(iii) Outline the key quantitative and qualitative analyses the rating agency is likely to perform before assigning the rating. (6)

**[16]**

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