INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

5th November, 2014

Subject SA5 – Finance

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) Post the sub-prime crisis and worldwide financial meltdown, your firm has been engaged by the Indian Banking sector regulator. The terms of engagement consist, among other activities, of assistance in the development of regulations to ensure a resilient financial sector in India. Your work stream focuses on assisting the regulator in assessing if individual Banks in the Indian financial system are well capitalized and capable of surviving a volatile business environment. The regulator would like to assess your knowledge and expertise before trusting your output.

i) Explain the term Capital Adequacy. Why are banks expected to keep adequate capital? (6)

ii) The regulator indicates that they would like to institute a comprehensive capital adequacy review of all the Banks under its jurisdiction. This involves mandatory stress tests based on a given set of scenarios that all Banks are expected to run. State the key domestic and international macro-economic indicators that could be a part of the scenarios. (5)

iii) All Banks are expected to submit a capital plan to the regulator, for an assessment of the proposals for raising capital as well as dividend payouts. The regulator intends to assess if a Bank can meet the obligations under its capital plan while being adequately capitalized. Describe the components you would expect to be present in a capital plan of a Bank. (5)

iv) Describe how you will calculate the Value at Risk for a bank's "trading assets" using the historical simulation approach (6)

v) List the key principles to be considered by the regulator while establishing a supervisory stress testing and capital adequacy review regime. (5)

vi) Based on the results of the capital adequacy review, the regulator expects to incorporate capital buffers in addition to the existing minimum capital requirements. State your views on the rationale and function of each of the following buffers, proposed by the regulator:

a) Countercyclical Buffer

b) Capital Conservation Buffer

c) Buffer for Systemically Important Financial Institutions (3)

vii) Explain the key features of Basel III, and how it expects to strengthen the Banking system against the causes of the Subprime crisis of 2008. (5)

viii) Basel III places considerable emphasis on modelling and managing liquidity risk. In your view what are the key liquidity ratios you would look at for assessing the liquidity position of a bank? (5)

The regulator would also like to understand how banks can convert their derivatives positions into credit equivalents for computing the capital requirements.

ix) **a)** Describe briefly the two methods by which off balance sheet items like derivative positions can be converted into on-balance sheet credit equivalents. Evaluate the advantages and disadvantages of these approaches (7)

b) The Regulator would like to impose restrictions on the derivative positions of the Banks in view of the banking crisis faced by many of them. Briefly discuss the key control mechanisms which the banks need to put in place for the purpose of minimising the losses on account of their derivative positions (6)

In view of the significant changes in the banking environment post 2008 crisis, the Regulator would like to strengthen the regulatory monitory mechanism in respect of Banks' operations and risk management systems.

x) Describe the operational and accounting information the Regulator would ask to assess the financial health of a large Indian bank with branch offices in several countries. (10)

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Q. 2) Cadmin Paints is a large listed decorative paint company which has been in existence for nearly three decades.

In January 2011, Cadmin had issued Rs. 600million 12 percent bonds with a term to maturity of nine years. The bonds were issued at the face value of Rs. 100/- per bond. This bond issue had an embedded call option which would enable the company to redeem the bonds anytime after three years. The call premium was fixed at 4 percent of the face value.

During June 2014, the CFO of the company proposed that the company should exercise the call option. This was based on his belief that the long term interest rates are likely to decline within the next 6 months to one year. He further recommended that the 12 percent bond can be redeemed by issuing Rs. 600 million, 10 percent bonds with a term to maturity of 6 years. One of the major credit rating agencies has provided an indicative rating of "A" for this issue.

The issue cost associated with the new bond issue will be Rs. 6 million. The marginal tax rate applicable to Cadmin is 35%. You can assume that both the issue cost and call premium are tax deductible expenses.

i) Given the current interest rate and inflation rate environment in India, state with reasons whether you subscribe to the CFO's view about downward shift long term interest rates. (4)

ii) Using a DCF (Discounted Cash Flow) Approach, evaluate the financial feasibility of the CFO's proposal to call back the 12% bonds. Show all calculations and state all assumptions underlying your evaluation. You have been informed that the marginal post-tax cost of debt for the company is 7.5 percent per annum. (4)

iii) From an investor's standpoint, compare the cash flows on a callable bond with the cash flows on an Asset- Backed Security (ABS) (3)

iv) Explain how you would calculate the value of the option embedded in a callable bond. (6)

In a recent meeting of the Capital Budgeting Committee, the CEO of Cadmin has proposed that the company should expand the product range to include industrial paints. In response, the Director (Operations) has suggested that the company should initially manufacture a generic industrial paint called IP-1 and later on make a follow on investment to manufacture a speciality industrial paint called IP-2

The projected cash flows associated with the manufacture of IP-1 are as follows:

[Rupees in million]

Year	**0**	**1**	**2**	**3**	**4**
Initial Outlay	**(300)**				
Post Tax Operating Cash Flow		**40**	**100**	**100**	**80**
Terminal Cash Flow					**20**

The post tax hurdle rate applicable to such projects is 14 percent

If Cadmin undertakes the IP-1 project now, it will be in a position to make a follow – on investment in IP-2, which will require an investment of Rs. 600 million. The expected cash flows of IP2 will be twice those of IP-1. The standard deviation of the cash flows associated with IP-2 will be 30 percent per annum. The risk free rate of interest is 9 percent.

v) Calculate the net present value of the cash flows associated with IP-1 (1)

vi) Calculate the value of the option to invest in manufacturing IP-2 .State the assumptions underlying your calculations (4)

vii) **a)** Distinguish between financial options and real options (2)

b) Briefly discuss the key issues connected with the valuation of real options (4)

Cadmin intends to finance the IP-1 project through a private placement of Rs.300 million 12 percent bonds with a term of 8 years. The credit rating agency has assigned an indicative Rating of “BBB” for this issue. Cadmin has approached a large private sector life Insurance company for investing in these bonds. After evaluating the proposal submitted by Cadmin in the context of the investment policy of the insurance company, the CIO [Chief Investment Officer] of the insurance company has recommended that the insurance company must not invest in these bonds

viii) Discuss the factors which the credit rating agency is likely to have considered before assigning the indicative rating of BBB (5)

ix) Outline the plausible factors which the CIO would have considered prior to making the recommendation (4)

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