INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

29th October 2007

Subject SA5 – Finance

Time allowed: Three Hours (09:45* – 13.00)

INSTRUCTIONS TO THE CANDIDATE

1. *Do not write your name anywhere on the answer scripts. You have to write only your Candidate Number on every answer script.*
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 have then three hours to complete the paper.*
3. *Mark allocations are shown in brackets.*
4. *You must not start writing your answers in the answer papers until instructed to do so by the Supervisor.*
5. *Attempt all questions, beginning your answer to each question on a separate sheet.*
6. *Fasten your answer sheets together in the numerical order of the questions.*
7. *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 are 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 same should answer the question with reference to Indian environment.*
8. *In addition to this paper you should have available Actuarial Tables and your own calculator.*

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
Hand in BOTH your answer script and this question paper to the supervisor Separately.

Q. 1)

a) Explain fully the following terms:

(i) Short Term Financial Planning (5)

(ii) Long Term Financial Planning (7)

b) A small regional bank is planning to expand its consumer finance business. As a part of this initiative, the bank wants to introduce a numerical credit scoring system in processing credit applications from potential customers. The Managing Director of this bank wants you to prepare a note covering the following:

(i) the steps involved in constructing a numerical credit scoring system with a simple example and

(ii) the advantages of using a numerical credit scoring system

Prepare a note covering the above points. (8)

c) Define Altman's Z score and briefly discuss why each of the terms appears in the score (4)

d) Glean and Clean Limited (GCL hereafter) is a FMCG (Fast Moving Consumer Goods) company engaged in manufacturing and distributing detergent bars and soaps. The company had been enjoying a fairly robust growth rate till two years ago. However intense competition from the FMCG majors in this segment has slowed down the growth rate considerably over the last two years.

In a recent Senior Leadership Team meeting, the marketing director of GCL advocated a relaxation in the credit policy (applicable to dealers) of GCL for stimulating sales. The finance director promised to consider this request favorably provided the relaxation in credit has a positive impact on net income. The CEO of this company has sought your help as a Financial Consultant to recommend an appropriate credit policy change.

You have been provided with the following information

- GCL classifies its dealers into 4 categories, 1 through 4. Currently GCL extends unlimited credit to dealers in categories 1 and 2, limited credit to dealers in category 3 and no credit to customers in category 4
- GCL extends 30 days of credit to its dealers who are deemed eligible for credit under its credit standards
- To induce its dealers to pay early, GCL offers cash discount. Its credit terms are 1/10, net 30.
- The current sales of GCL are Rs. 800 million. The proportion of credit sales and cash sales are 0.7 and 0.3 respectively. 50 percent of the customers (by value) who are granted credit avail of cash discounts.
- The contribution margin ratio for GCL is 30%. The cost of capital is 12% and the average collection period (ACP) on credit sales is 20 days.
- If the company extends unlimited credit to dealers in category 3 and limited credit to customers in category 4, the sales of the company would increase by Rs. 50 million on which the bad debt losses would be 12 percent. The ACP however will remain unchanged at 20 days.

- If the company extends its credit period from 30 days to 60 days, its sales to customers who are granted credit will increase by Rs. 40 million. Further the percentage of customers who will avail of cash discount will decrease to 20 percent. The ACP will increase to 50 days.
- If the company relaxes its discount terms to 2/10, net 30 its sales to customers who are granted credit will increase by Rs. 20 million. Further, the percentage of credit customers who will avail of cash discount will increase to 70 percent and the ACP will decrease to 16 days.

Required:

- Examine the impact of the above credit policy changes one at a time on net income, and make an appropriate recommendation. State the assumptions underlying your recommendation. Ignore tax. (12)

Note: Credit terms like 1/10, net 30 means that a discount of 1 percent is offered if the payment is made by the tenth day; otherwise the full payment is due; by the thirtieth day

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Q. 2)

a) Evaluate the following statements about cost of capital:

(i) A firm cost of capital is unaffected by its choice of financial (capital) structure

(ii) A firms cost of capital falls with increasing debt

(iii) There is a level of debt at which a company can minimize its cost of capital (8)

b) Gamma Technologies is considering an expansion project involving a cost of Rs. 500 million. The CEO and CFO of the company are convinced that debt is a cheaper source of finance and are confidant that the company can raise the entire amount of (perpetual) debt finance at an interest rate of 11 percent per annum. However, there is some apprehension about the company's ability to meet the interest burden in a recessionary year. The CFO has estimated that in a recessionary year, the net cash flows of the company, not taking into account the interest burden on the new debt, would have an expected value of Rs. 160 million with a standard deviation of Rs. 90 million.

(i) Estimate the probability of cash inadequacy during a recessionary year if the entire Rs. 500 mln is raised as debt finance (2)

(ii) If the management is prepared to accept only a 12.5% chance of cash inadequacy what proportion of 500 million can be raised as debt finance? (3)

(iii) What are the limitations of this approach for assessing the debt capacity (4)

Note: You may assume that the net cash flows are normally distributed

c) List the three most common types of credit derivatives. Briefly describe a total return swap and explain how a total return swap can be an efficient financing tool. (5)

d) A financial institution has entered into a swap dependent on the sterling interest rate with counterparty X and an exactly offsetting swap with counterparty Y. Which of the following statements are true and which are false?

(i) The total present value of the cost of defaults is the sum of the present value of the cost of defaults on the contract with X plus the present value of the cost of defaults on the contract with Y.

(ii) The expected exposure in one year in both contracts is the sum of the expected exposure on the contract with X and the expected exposure on the contract with Y. Explain your answers (5)

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Q. 3)

a) Briefly discuss the salient features of a typical regulatory framework governing mergers and takeovers (8)

b) Modern Pharma is a diversified pharmaceuticals company that has presence in most of the therapeutic segments. The company has grown at a health rate over the past fifteen years, thanks to a balanced program of organic growth and acquisitions. In the recent strategy session, the Senior Leadership Team (SLT) of Modern Pharma identified the cardiovascular segment as a thrust area for the next few years. The SLT decided to foray into this segment through the acquisition route. Based on a comprehensive set of criteria like revenues, growth rate, profit margin, etc, the SLT identified Magnum Drugs as a potential candidate for acquisition.

The financial statements of Modern Pharma and Magnum Drugs for the most recent period are given below:

Modern Pharma: Balance Sheet

(Rs in mln)

Liabilities		Assets	
Shareholders' Funds (40 mln shares, Rs. 10 par)	4600	Net Fixed Assets	3300
Loan Funds	600	Investments	500
		Net Current Assets	1400
Total	5200	Total	5200

Modern Pharma: Income Statement

(Rs in mln)

Net Sales	9680
Profit before depreciation, interest and taxes	1920
Depreciation	500
Profit before interest and taxes	1420
Interest	80
Profit before taxes	1340
Tax	440
Profit after taxes	900

Magnum Drugs: Balance Sheet

(Rs in mln)

Liabilities		Assets	
Shareholders' Funds (20 mln shares, Rs. 10 par)	1300	Net Fixed Assets	1080
Loan Funds	500	Investments	100
		Net Current Assets	620
	1800		1800

Magnum Drugs: Income Statement
(Rs in mln)

Net Sales	3040
Profit before depreciation, interest and taxes	460
Depreciation	140
Profit before interest and taxes	320
Interest	60
Profit before taxes	260
Tax	70
Profit after taxes	190

The market price per share of Modern Pharma is Rs. 160
and the market price per share of Magnum Drugs is Rs. 51

Required:

(i) Define the term "horizontal merger" and explain why to firms might undertake a horizontal merger (5)

Answer questions (ii) and (vii) based on the above information about Modern Pharma and Magnum Drugs

(ii) Calculate the exchange ratio that gives equal weightage to book value per share (BVPS), earnings per share (EPS) and market price per share (MPS) (3)

(iii) Calculate the post merger EPS of Modern Pharma if the exchange ratio is 1:4. Assume that there is no synergy gain (2)

(iv) If the merger is expected to generate a synergy gain of 5 percent, what is the maximum exchange ratio Modern Pharma must accept to avoid initial dilution of EPS? State assumptions, if any (3)

(v) Assume that the P/E multiple is used the basis for determining the exchange ratio. What is the maximum exchange ratio acceptable to the shareholders of Modern Pharma if the P/E ratio of the combined entity is 13 and there is no synergy; gained? (3)

(vi) Assume that P/E multiple is used as the basis for determining the exchange ratio.

What is the minimum exchange ratio acceptable to the shareholders of Magnum Drugs if the P/E ratio of the combined entity is 12 and there is a synergy benefit of 2 percent? State assumptions, if any. (3)

(vii) The three commonly used bases for establishing the exchange ratio in a merger are: Earnings per Share, Market Price per share and Book Value per Share
Briefly discuss the merits and demerits of using each of these bases for establishing the exchange ratio (7)
Which of these bases will you recommend for determining the exchange ratio between Modern Pharma and Magnum Drugs? Briefly justify your recommendation and state assumptions, if any. (3)
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