

**Actuarial Society of India**

**Examinations**

**May 2006**

**CT2 – Finance and Financial Reporting**

**Indicative Solutions**

**Que 1-10**

Sol 1	D
Sol 2	D
Sol 3	D
Sol 4	C
Sol 5	A
Sol 6	C
Sol 7	C
Sol 8	A
Sol 9	B
Sol 10	A

[Each carries 2 marks total 20]

**Que 11)**

A **Eurobond** is a bond issued in the Euromarket. A Eurobond is marketed internationally, mainly by London branches of international banks. (1)

**Preference shares** are much less common than ordinary shares. Overall, preference shares are much less important than ordinary shares. The investment characteristics are more often like those of unsecured loan stocks than ordinary shares. Assuming that the company makes sufficient profits, they offer a fixed stream of franked investment income. Preference shares pay a fixed dividend, and so can be regarded as a form of fixed-interest stock. The dividend is usually expressed as a fixed percentage of the par value, so when we refer to the “dividend” from preference share it is more akin to an interest payment on a bond than to a dividend on an ordinary share. They do not usually carry voting rights.

Preference shareholders have a preferential right to either dividends, or return of capital, or both, compared to ordinary shareholders. (1)

**Convertible** forms of company securities are, almost invariably, unsecured loan stocks or preference shares that convert into ordinary shares of the issuing company. Convertible preference shares are preference shares which give the right to convert into ordinary shares at a later date. The investor does not pay anything to convert other than surrendering the convertible preference shares. Convertible unsecured loan stocks are unsecured loan stocks which give the right to convert into ordinary shares of the company at a later date. For example, Rs 100 nominal of convertible unsecured loan stock might be convertible into, say, 30 ordinary shares on 1st October 2006.

The only difference between convertible loan stocks and convertible preference shares is the form of the capital before it converts into equity. Convertible loan stocks are part of loan capital until conversion, whereas convertible preference shares are part of share capital. The convertible will have a stated annual interest payment. (1)

**Warrants** are call options written by a company on its own stock. The purchaser of a warrant has the right but not the obligation to buy a fixed number of the company's shares at a fixed price at a fixed date. (1)

**Floating-rate notes (FRNs)** are medium-term debt securities issued in the Euro market whose interest payments "float" with short-term interest rates, possibly with a stipulated minimum rate. (1)

[Total 6]

**Que 12)**

A listing will help to raise capital. If the company is quoted then it will be able to sell shares to a wide market and raise large sums cheaply. This is because the listing will provide a free secondary market in the company's shares.

Providers of debt will lend more happily to a quoted company as they know that the company must comply with the Stock Exchange requirements on an ongoing basis. Shareholders will also benefit from the fact that the shares will have a readily observable market price which may be useful for tax purposes and also for portfolio management. These advantages will also help the company to raise funds.

The ease with which shares in quoted companies can be traded means that shareholders have an easy exit route if they ever decide to sell their investment. The fact that they can do so means that they will feel far more secure when buying shares.

The ready availability of a market price means that the shares are far more acceptable to employees if they are granted as part of a share option scheme. It will be possible to attribute a value to the shares or options received. The fact that the shares are listed will also make them more readily available to use as the purchase consideration in a takeover situation. Shareholders of the target company will have a far clearer impression of the relative values of the shares being offered compared with the ones that they already hold.

[Total 8]

**Que 13)**

The manager should consider the current level of gearing. If the company is already heavily financed by debt then it will be difficult for him to justify borrowing more.

The use of one form of finance can have implications for the risks, and therefore costs, associated with the other. Issuing fresh debt will expose the existing shareholders to a greater risk of losing their investment if the company is forced to default on its loans. This will mean that the cost of equity might increase. Issuing fresh equity creates a broader "buffer"

between assets and liabilities for providing lenders with collateral and that might reduce the cost of debt.

Debt finance is usually cheaper than equity and so the company should consider using it wherever possible. The lower cost is partly because the debt holders are taking much less of a risk when they purchase debt stock and are, therefore, willing to accept a lower rate of return.

The cost of debt is further reduced because interest is allowable as an expense for tax purposes, whereas dividends on shares is not. It might be difficult to sell Rs 5,00,000,000 of share capital without incurring disproportionate issue costs. Raising debt can be rather more flexible. The company could, however, get round this by issuing rather more than Rs 5,00,000,000 and using the additional sum raised to repay some of its existing debt.

**[Total 8]**

**Que 14)**

Many figures in the financial statements are difficult to interpret in isolation. For example, it means very little to know how much profit a business made without having some corresponding idea of the amount of capital that had to be invested in order to generate this income.

Ratios provide a basis for comparing related figures and for identifying issues that ought to be investigated. Management might, for example, monitor liquidity by calculating the current ratio and would deal with any deviation from the optimal relationship – usually 2:1.

Trends in ratios can be particularly revealing. For example, a decreasing current ratio is normally a more worrying sign than a ratio which appears to be low in absolute terms.

Ratios do have a number of drawbacks. For example, they can be distorted by willful manipulation of the figures (e.g. window dressing or off-balance sheet financing). They can also omit crucial information such as contingent liability information.

**[Total 4]**

**Que 15)**

RBI acts in a supporting role for the various institutions that are active in the short-term money markets, particularly the discount houses.

The discount houses provide short term finance by borrowing cash surpluses that might be available for as little as a few days and lending for a slightly longer period.

This difference in maturity between their assets and liabilities can leave them exposed to the risk of being unable to repay their debts. The risk of default is avoided because RBI will always provide the discount houses with support whenever they need it. This can take the following forms:

1. The Bank will always be prepared to purchase Treasury or local authority bills or bills of exchange from the discount houses in order to help them through a cash crisis.
2. The Bank will act as a lender of last resort provided the discount houses deposit bills as security.
3. The discount houses can sell a bill of exchange to the Bank and simultaneously agree to repurchase it at a later date.

[Total 4]

### Que 16)

Investment banks specialise in corporate finance. Their role is largely advisory.

Typically, they will provide advice on the following types of matter:

1. bid or defence strategies in a takeover
2. financial aspects of a merger
3. investment projects
4. raising capital

They may also act as intermediaries in the issue of financial instruments:

1. issuing houses in share issues
2. underwriters of new issues
3. Eurobonds

They also provide fund management services:

1. management of unit trusts, investment trusts and pension funds
2. organisation of the Eurobond market

Occasionally, investment banks provide finance to companies.

[Total 6]

### Que 17)

**Agency theory, which considers the relationship between a principal and an agent of that principal, includes issues such as the nature of the agency costs, conflicts of interest (and how to avoid them) and how agents may be motivated and incentivised.**

There are many groups of stakeholders in an organisation, each with its own objectives. These objectives may conflict. This causes problems when one group is responsible for taking decisions on behalf of others. The directors of a company make strategic decisions on behalf of its shareholders, whilst delegating operational decisions to managers. This separation of ownership and management can lead to *principal-agent problems* and *agency costs* if the interests of the owners and managers diverge.

*Conflicts of interest* may also arise between other stakeholders in a business, notably between lenders and the providers of equity capital, and may be reinforced by *information asymmetries*. *Agency theory* considers issues such as the nature of the agency costs, conflicts of interest (and how to avoid them) and how agents may be motivated and incentivised.

**Such conflicts are referred to as *principal-agent problems*, and give rise to *agency costs*. These include the costs associated with monitoring the actions of others, and seeking to influence their actions.**

In practice, the agency costs incurred by the shareholders are usually defined as the sum of three different component costs, namely:

1. those incurred in monitoring the managers
2. those incurred in seeking to influence the actions of managers
3. those incurred because the managers do not act in the owners' best interests.

There are two factors that encourage managers to operate in the interests of the shareholders: job security and remuneration packages. Managers do not want to lose their jobs, nor their reputations. Many managers receive bonuses based on the company's earnings or the share price.

If the shareholders feel that the company is underperforming, they can elect a new board of directors, which, in turn, will probably appoint a new management team. Alternatively, shareholders might express their disapproval by selling their shares. If sufficient shareholders do this, then the share price falls. If the company is underperforming and the share price falls, the company is vulnerable to a take-over bid. The management team is likely to be replaced by one that will do what is necessary to maximise shareholder value.

[Total 4]

**Que 18)**

**a)**

$$\text{Cost Saving} = 5,000 * 20 * \{ 1/1.1 + 1.09/1.1^2 + \dots + 1.09^3/1.1^4 \}$$

$$= 5,000 * 20 * 1/1.1 * \{ 1 + (1.09/1.1) + \dots + (1.09/1.1)^3 \}$$

$$= 5,000 * 20 * v^{10\%} * s_4^{1\%}$$

[assuming  $1/(1+j) = 1 / (1.10/1.09)$  implies  $j = 0.91\% \sim 1\%$  (approx);  $s_4$  above has been taken from tables using 1%; exact calculation using 0.91% will also get full marks]

$$= 5,000 * 20 * .9091 * 4.06$$

$$= 369,090.91$$

**Please note that the exact answer (no approximation) would be Rs 358,708.**

Cost that will be incurred = 331,210 < cost savings and hence go for it.

**(4)**

**b)**

The discount rate should be real rate of discount.

Since the cashflows are real these should be discounted at real interest rate. In the current situation the real interest rate is

$$= 1.10/1.15 - 1 = -4.3478\%$$

Please note that the first year end cashflow has not been converted to real and other cashflow also have been converted in a wrong way.

The revised calculations are given below:

year	Real Expected Cashflows	Discounted value of real cashflows	PV of cashflows
1	100,000 * 1.15 <sup>-1</sup>	86,957 * 0.956522 <sup>-1</sup>	90,909
2	109,000 * 1.15 <sup>-2</sup>	82,420 * 0.956522 <sup>-2</sup>	90,083
3	118,810 * 1.15 <sup>-3</sup>	78,120 * 0.956522 <sup>-3</sup>	89,264
4	129,503 * 1.15 <sup>-4</sup>	74,044 * 0.956522 <sup>-4</sup>	88,452
<b>Total</b>			<b>358,708</b>

Which leads to the correct decision i.e. NPV= 358,708-331,210 >0.

{ which is equal to answer to part a) except for the approximation assumed in solving part a) }  
(5)

**c)**

Surely the IRR lies between 10% and 15%. Since NPV at 10% is 27452 (from part b) where as at 15% is -9,671 (from part b).

Using linear interpolation we get 13.70% for NPV to be zero. The formula for the same is  $10\% + (15\% - 10\%) / (-9,671 - 27,452) * (0 - 27,452)$ .

Since this is a convex function the actual value would be less than the above estimated value. Using the estimate of 13.50% we get NPV =802.

Therefore the estimate lies between 13.5 and 13.70. Since at 13.70% the NPV will be negative and at 13.50% it is positive and we want an accuracy of 1/10<sup>th</sup> of decimal, the IRR is 13.6%.

(4)

**d)**

Advantages of using IRR for project evaluation:

- 1) It is simple to understand and easy to communicate.
- 2) Often easy to compare against cost of capital and interest rates in the economy.

## Disadvantages of using IRR

- 1) For projects with multiple negative cashflows there may be multiple or not a single IRR.
- 2) It ignores the scale of the project. Thus a small project with a high IRR but lower value may be accepted ahead of an alternative larger project with a lower IRR but a higher value.
- 3) Total IRR of all projects together is not just a weighted sum of individual IRRs and similarly the average IRR across scenarios is not just average of all scenario IRRs.

(4)

[Total 17]

**Que 19)**

New India Insurance Co. Ltd.

Fire Revenue account for the year ended 31st March , 2005

**Expense**

<b>Particulars</b>	<b>Amount</b>	
Claims under policies		
less recovered from reinsurance	637,696	
Add: out at the end of the year	104,000	741,696
Commission on direct business		299,777
commission on reinsurance accepted		60,038
Expenses on fire account		375,947
Profit transferred to P & L account		1,053,963
Reserve for unexpired risk 40% of net premium		1,035,603
		<b>3,567,024</b>

**Revenue**

<b>Particulars</b>	<b>Amount</b>	
Balance of account at the beginning of the year:		
Reserve for unexpired reserve		930,000
Premium less re- insurance		2,589,008
Commission on re- insurance ceded		48,016
		<b>3,567,024</b>



## Profit and loss account for the year ended 31st March , 2005

Rents		67,500
Rates and taxes		5,804
Audit fees		36,000
Provision for taxes		439,063.6
Transfer to general reserve		200,000
Balance c/d		533,595.4
		<b>1,281,963</b>

Balance b/d		75,000
Profit transferred from revenue account		1,053,963
Income from investments		153,000
		<b>1,281,963</b>

Balance Sheet as on 31<sup>st</sup> March 2005

Liabilities		Amount
Share capital		900,000
General resesrve	45,000	
additions during the year	200,000	245,000
Profit and loss account		533,595.4
Fire revenue account		1,035,603
Other liabilities		
Claims intimated but not paid	104,000	
Provision for taxation	439,063.6	
sundry creditors	22,500	565,563.6
		<b>3,279,762</b>

Assets		Amount
Investments		3,075,000
Outstanding premium		22,300
Cash and bank balances		182,462
		<b>3,279,762</b>

**Notes:**

1) Claims paid	602,815	
+ Survey fees & legal charges	56,000	
+ Recovered from re- insures	21,119	637,696
2) Expenses of management	431,947	
- survey and legal fees	56,000	375,947
3) Premium	2,701,533	
- reinsurance	112,525	2,589,008
3.2) Reserve for unexpired risk:		
40 % of net premium		1,035,603
4) Provision for taxation		
+ Profit from revenue account	1,053,963	
+ Income from investments	153,000	
	<b>1,206,963</b>	
- Rent	67,500	
- Rates and taxes	5,804	
- Audit fees	36,000	
	<b>109,304</b>	1,097,659
Provision for taxes @ 40 %		439,063.6

**[Total 23]**

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