Institute of Actuaries of India

Subject CT2 – Finance and Financial Reporting

May 2010 Examinations

INDICATIVE SOLUTIONS

Introduction

The indicative solution has been written by the Examiners with the aim of helping candidates. The solutions given are only indicative. It is realized that there could be other points as valid answers and examiner have given credit for any alternative approach or interpretation which they consider to be reasonable.

1. B **[2]**
2. A **[2]**
3. D **[2]**
4. B **[2]**
5. A **[2]**
6. C **[2]**
7. D **[2]**
8. D **[2]**
9. C **[2]**
10. B **[2]**

11.

(a) Define the following:-

i. Beta Value –

A measure of a stock's volatility relative to movements in the whole market. Usually defined as the covariance of the return on the stock with the return on the market, divided by the variance of the market return.

ii. Covenant –

An agreement that is legal & binding on the parties involved.
The expression is often used in association with corporate debt, because the borrower is bound to the terms of the agreement.
The expression is also used in property investment because the tenant or lessee is bound to the terms of the lease agreement.

iii. Introduction –

A method of obtaining a listing for an unquoted company which already has a large number of investors owning its shares.
No new capital is raised by this means.
It can also happen when a share is listed on a different stock exchange or when a merger of two existing companies occurs and a new company is formed.

iv. Underwriting –

The provision of sum form of guarantee.
In investment, underwriting is where an institution gives a guarantee to a company issuing new shares or bonds that it will buy any remaining shares or bonds that are not bought by other investors.

(b) Discretionary monitoring costs & covenanting costs could only be eliminated if the stakeholders could trust one another.
In principle, this would simply require mutual confidence in one another's integrity.
In practice, there would always be observable conflict of interest and that would create room for doubt.
These doubts would grow because of information asymmetries.
Concerns about attitudes & commitments would grow because those whose behavior and intentions were in doubt would be the source of any assurance offered.
In reality, it can be seen that these pressures often lead to additional, non statutory monitoring and disclosure that is designed to reduce the uncertainties arising from information asymmetry.

(c) Financial management involves making careful choices in the raising of finance (the financing decision) and in the investment of this finance in real assets (the capital budgeting decision).

It is very important because a wrong decision could have very serious consequences for the business.

It is also very difficult because there are often many options to choose from and the outcomes from any of the options are subject to great uncertainty.

There are many factors to consider and it is important that the financial team gathers all the available information and examines the options objectively and realistically.

[8]

12.

(a)

A chargeable gain is typically defined as:

Sale Price − Purchase Cost

The sale price can be reduced to reflect any costs associated with the sale.

The purchase cost can be increased by any costs associated with the purchase, and any expenditure made to enhance the value of the asset during the period the asset was held.

In normal circumstances, the purchase cost would be the original cost of the asset.

Taxable Gain	=	(30,00,000 – 3,00,000) – (6,00,000 + 4,00,000) x (200 / 125)
	=	11,00,000
Capital Gains Tax	=	(11,00,000 – 1,00,000) x 25%
	=	2,50,000

[b]

Most countries have a double taxation agreement with other countries.

Double taxation relief (DTR) means that the local tax authority will allow companies and individuals with overseas income to offset tax paid overseas against their liability to domestic corporation (or income) tax on that income.

The maximum offset is the rate of tax that would have been paid locally on the grossed-up income.

DTR is only available on income received from abroad, not on revenue of a capital nature.

[6]

13.

(a) Reasons for seeking full stock exchange listing

- To raise capital for the company
- To make it easier for the company to raise further capital
- To give existing shareholders an exit route
- To make the shares more marketable and easy to value

(b)

Offer for sale (at a fixed price)

In an offer for sale at a fixed price, a predetermined number of shares (or other securities) is offered to the general public at a specified price.

Advantages

- Most common type of method for large issues
- Fixed price so amount raised is known in advance
- The issuing house advises the company about the timing and the pricing of the issue and oversees the whole issue, coordinating the work of other professional advisers
- The issuing house underwrites the issue thus ensuring that the whole issue will be sold
- Is likely to attract a wide range of shareholders

Disadvantages

- Will have to pay the issuing house a fee (or allow it a margin on the selling price) in respect of its administration role and underwriting

Offer for sale by tender

An offer for sale by tender is similar to an offer for sale at a fixed price. However, instead of inviting applications at a specified price, the issuing house invites members of the public to submit a tender stating the number of shares which they are prepared to buy, and the price which they are prepared to pay.

Advantages

- May raise more money than an offer for sale
- May reduce underwriting costs

Disadvantages

- The method is likely to discourage some types of shareholder and therefore lead to a narrower distribution of the shares
- Amount to be raised is uncertain
- More complex to administer than an offer for sale (so higher fee)

Offer for subscription

These are similar to offers for sale. They are normally at a fixed price, but can be by tender. However, the whole issue is not underwritten. The company sells shares directly to the public. The issuing company bears (at least part of) the risk of under subscription. An issuing house will still be employed as an adviser to the issue.

Advantages

- Cheaper than the other methods of issue because the company issues the shares
- Directly to the public without the help of an issuing house (although it may hire an issuing house as an adviser)

Disadvantages

- Company has responsibility for the issue
- Company may not raise the required money (since not underwritten)
- Hardly ever used to issue share capital

Placings

A simpler, cheaper method of making small issues is known as a "placing" or "selective marketing". The issuing house first buys the securities from the company. The issuing house will then individually approach institutional investors such as pension funds and life offices directly. The institutions will be offered securities, but no public applications are invited.

Advantages

- Most common type of method for small issues
- Fixed price so amount to be raised is known
- Simple and fairly cheap method of issue since the issuing house approaches only institutional investors and so keeps administrative and marketing costs low

Disadvantages

- No public applications are invited so the shares could end up being owned by a small number of shareholders and thus be less marketable.

Introductions

Introductions do not involve the sale of any shares. They simply mean that the existing shares will in future be quoted on the Stock Exchange.

Advantages

- Helps overseas listing for an already listed company
- Demerger situations when one company is demerged into more companies
- Unquoted company having sufficient capital and wide ownership wanting to get quoted

Disadvantages

- Stock exchange requires that 25% of shares to be in public hands

[8]

14. (a)

Cost of Equity	=	Risk Free Return + Beta x Equity Risk Premium
	=	8% + 1.25 x 7%
	=	16.75%
Cost of Debt	=	Gross Cost of Debt x (1 – t)
	=	4% x (1 – 0.3)
	=	2.8%
Company's WACC	=	0.5 x 16.75% + 0.5 x 2.8%
	=	9.775%

(b)

To find the new required return to equity, we need to find the ungeared beta. Since debt can be raised at the risk-free rate, we can use the following formula:

Geared Beta	=	Ungeared Beta x [1 + Debt: Equity Ratio (1 – t)]
1.25	=	Ungeared Beta x [1 + 1 (1 – 0.3)]
Ungeared Beta	=	1.25 / 1.7
	=	0.7353
New Cost of Equity	=	Risk Free Return + Beta x Equity Risk Premium
	=	8% + 0.7353 x 7%
	=	13.15%

(c)

To find the new required return to equity, we need to find the new geared beta.

Geared Beta	=	Ungeared Beta x [1 + Debt: Equity Ratio (1 – t)]
	=	0.7353 x [1 + 0.5 x (1 – 0.3)]
	=	0.7353 x 1.35
	=	0.9926
New Cost of Equity	=	Risk Free Return + Beta x Equity Risk Premium

= 8% + 0.9926 x 7%

= 14.95%

Assuming the net cost of debt remains at 2.8%, then the new WACC can be found.

Company's new WACC = (2 / 3) x 14.95% + (1 / 3) x 2.8%

= 10.9%

[8]

15.

Profitability	2009	2008
Return on Capital Employed	13,104/(14,448 + 20802) = 37%	8,730/(12,300 + 8,025) = 43%
Gross Profit percent	15,120 / 25,200 = 60%	9,540 / 18,000 = 53%
Distribution cost/Sales	1,512 / 25,200 = 6%	540 / 18,000 = 3%
Revenue/Fixed assets	25,200 / 36,000 = 0.70	18,000 / 21,000 = 0.86

[4]

16.

Institution	Investment Banks	Building Societies	Pension Schemes	Life Insurance Companies
Role	Advice companies and help companies raise finance	Channel private individuals excess short- term cash to private individuals to borrow to buy a house	Channel savings for retirement into the long- term capital markets	Pool mortality & investment risks by channeling savings into long term capital markets
Source of Funds	Receive fees for advice, underwriting commission, fund management, Eurobond, dealing, trusteeship, and bill acceptance	Deposits from private individuals with a small, but increasing, amount from the money and bond markets.	Contributions from employers and employees only.	Premium income from policyholders
Application of Funds	Invest in bills and provide loans & lease to companies	Grant house purchase mortgages and some personal loans.	Typically funds are invested in equities, longer dated gilts, company debts, overseas securities, property, money market instruments & index linked gilts.	Typically funds are invested in mixture of equities & fixed interest securities. May have some investment in overseas securities, property, money market investments & index linked gilts.

[6]

17. (a)

(i)

The steps necessary to achieve an effective identification of the risks (upside as well as downside) facing the project can be summarized as follows:

- Make a high-level preliminary risk analysis to confirm that the project does not obviously have such a high risk profile that it is not worth analyzing further.
- A clear risk is that the finance cannot be raised. The commercial financial institutions may doubt the ability of the cricket association to successfully manage the project to a successful conclusion.
- Hold a brainstorming session of project experts and senior internal and external people who are used to thinking strategically about the long term.
- The aim will be to identify project risks, both likely and unlikely, to discuss these risks and their interdependency, to attempt to place a broad initial evaluation on each risk, both for frequency of occurrence and probable consequences if it does occur, and to generate initial mitigation options and discuss them briefly.
- Carry out a desktop analysis to supplement the results from the brainstorming session, by identifying further risks and mitigation options, using a general risk matrix, researching similar projects undertaken by the sponsor or others in the past (including overseas experiences), and obtaining the considered opinions of experts who are familiar with the details of the project and the outline plans for financing it.
- Carefully set out all the identified risks in a risk register, with cross references to other risks where there is interdependency.

High levels of correlation between individual risks will lead to a higher overall variance of the investment returns from the project, as the individual risks are less likely to cancel each other out.

(ii)

A risk matrix is a square table used for the identification and analysis of the risks inherent in a capital project.

It provides a systematic method of identifying and characterizing risks and thereby reduces the chance that any particular risk will be overlooked.

The main column headings shown relate to the causes of risk e.g. political, business, economic etc.

The row headings relate to the different risks that arise in the different stages of the project, e.g. creation of asset, operation of asset.

The risk analysis team considers each cell of the table in turn and identifies the relevant risks. The cells in the matrix can be ticked off to show whether the risk in question applies to the particular project, with a cross reference to the appropriate entry in the risk register.

The characteristics of the risks thus identified can then be analyzed

These will normally be assessed according to categories such as likelihood of occurrence, degree of dependence, controllability and financial impact on project.

(b)

Let INV = investment required at time t = 0 (i.e., INV = $-C_0$) and let x = rate of return. Then x is defined as:

$$x = (C_1 – INV)/INV$$

Therefore:

$$C_1 = INV(1 + x)$$

It follows that:

$$NPV = C_0 + \{C_1/(1 + r)\}$$

$$NPV = -INV + \{[INV(1 + x)]/(1 + r)\}$$

$$NPV = INV \{[(1 + x)/(1 + r)] – 1\}$$

When x equals r, then:

$$[(1 + x)/(1 +r)] – 1 = 0$$

and NPV is zero.

When x exceeds r, then:

$$[(1 + x)/(1 + r)] – 1 > 0$$

and NPV is positive.

[c]

Initial Cost of First Strategy = $10 million
Initial Cost of Second Strategy = $40 million
Additional Initial Cost associated with Second Strategy = $30 million
Additional Annual Cash Flow needed for Second Strategy to be viable:
= $30 million (APV, 12%, 15 years) = $4.40 million.
Size of Market under First Strategy = 0.05 * $200 million = $10 million
Size of Market under Second Strategy = 0.10 * $200 million = $20 million
Additional Sales Associated with Second Strategy = $10 million
After-tax Operating Margin needed to break even with second strategy =
4.40/10 = 44%

[20]

18.

a. Calculating Depreciation depends on major assumptions. The company has to estimate the useful life of the asset and the residual value.

Both figures are subject to massive uncertainty.

For example, useful life can be affected by physical characteristics such as wear and tear, by technical issues such as the possibility that demand might change and leave an asset worthless. The company must also decide how the difference between cost and residual value should be written off. For example, the choice between straight line and reducing balance depreciation can significantly affect the annual depreciation charge.

b. Depreciation Charge:-

i. 2007 –

Capital = Rs 10,00,000
Accumulated Depreciation = Rs 2,71,000

New Purchases = 1,60,000

Asset Sold During the year:-

Cost	–	1,20,000
Less: Depreciation	–	32,520
Net Amount		87,480
Less: Expected realizable value		20,000
Loss on sale of property		67,480

So, total depreciation charge on 2007 = [(10,00,000 – 1,20,000) – (2,71,000 – 32,520) + 1,60,000] * 10% = 80,152.

ii. 2008 –

Value of assets net of depreciation on 1.1.2008 = 7, 21, 368.
Depreciation charge = Rs. 72, 136.80.

^ Accumulated Depreciation till date.

c.

Cashflow statement for Rahul Enterprises 2009

Cashflows from operating enterprises		
Cash generated from operations*	5,63,100	
Interest paid	(16,500)	**[1]**
Tax paid	(1,47,360)	**[1]**
Net cash generated from operating activities	3,99,240	
Cashflows from investing activities		
Purchases of machinery	(315,000)	**[1]**
Interest received	10,500	**[1]**
Dividends received	12,600	**[1]**
Net cash used in investing activities	(291,900)	
Cashflows from financing activities		

Equity dividends paid	(45,000)	**[1]**
Net cash used in financing activities	(45,000)	
Net increase in cash/ cash equivalents and bank overdrafts	62,340	**[1]**
Cash/Cash equivalents and bank overdrafts at beginning of the year	444,000	**[1]**
Cash/Cash equivalents and bank overdrafts at end of the year	506,340	

* Cash generated from operations is:		
Operating Profit	575,550	
Plus Depreciation	67,350	**[1]**
Less Increase in inventories (stocks) [40500 + 6300]	(46,800)	**[1]**
Less Increase in trade receivables (debtors) [2,13,000 – 1,89,000]	(24,000)	**[1]**
Less Decrease in trade payables (creditors) [1,11,000 -1,20,000]	(9,000)	**[1]**
Cash generated from operations	563,100	

[20]
[Total Mark 100]

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