

Actuarial Society of India

Examination

November 2006

CT2: Finance and Financial Reporting

Indicative Solutions

Solution 1-10

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

[Total 20]**Solution 11**

The convertible has an option like component whose value increases with risk thus providing investors with a hedge if the firm turns out to be riskier than expected.

It also protects the investors against the management increasing the risk after the bonds are issued.

In highly leveraged companies, management is in a position to increase the shareholders value at the expense of bondholders. Convertibles control this shareholder – bondholder conflict by giving assurance to the bondholders that they will participate in any increase in shareholder value that results from increasing the risk of company's activities, by providing the bondholders with the right to convert their claims into equity.

Also, by reducing the current interest rate burden and thereby the likelihood of financial trouble, convertibles reduce the probability of bankruptcy. This allows company to follow aggressive policy in new investments, which are financially attractive but may also increase the probability of bankruptcy.

The convertible are issued by companies who are in a rapid growth stage and are also unable to issue long term debt due to high financial distress cost and at the same time are unwilling to issue equity to outside investors at today's stock price, as the management of such companies who are in early stages of growth trajectory feel that the current stock price may not fairly reflect the company's growth opportunities.

Besides this the information asymmetry problem between managers and outside investors will cause investors to reduce the value of company's shares on announcement of offering thus diluting value. So issuance of equity at current prices would cause excessive dilution of existing shareholders claim.

This unwillingness to issue equity despite the inability to issue debt sends positive signals to the market about the management confidence about the future prospects. This prevents the stock price from falling further below the current levels. The coupon is lower compared to straight debt and the bonds are expected to convert at a premium over the current price.

[Total 8]**Solution 12**

Factoring is often used synonymously with accounts receivable financing. Factoring is a form of commercial finance whereby a business sells its accounts receivable (in the form of invoices) at a discount. Effectively, the business is no longer dependent on the conversion of accounts receivable to cash from the actual payment from their customers. Businesses benefit from the acceleration of cash flow.

Recourse factoring is now the most common type of factoring transaction. This factoring transaction allows the factor to go back to the seller if payment is not received. The credit risk does not transfer to the factor during the recourse factoring process.

Normally, in the event of non-payment by the customer, the seller must buy back the invoice with another invoice (credit worthy). Recourse factoring is typically the lowest cost for the seller because the risk for the factor on the funding transaction is lower.

Non recourse factoring puts the risk of non-payment fully on the factor. If the customer does not pay the invoice, it's the factors problem to deal with and they cannot seek payment from the seller. The factor will only purchase solid credit worthy invoices and often turns away average credit quality customers. The cost is typically higher with this factoring process as the factor assumes greater risk.

[Total 5]

Solution 13

The adjustments are:

1. Deduct gross "franked investment income".
2. Add back any business expenses shown in accounts which are not allowable for tax.
3. Add back any charge for depreciation, and instead subtract the allowable "capital allowance"

[Total 3]

Solution 14

Double Taxation Relief 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

[Total 2]

Solution 15

The equation for Weighted average cost of capital (WACC) is

$$= [(0.7)(k_d)(1 - T)] + [(0.3)(k_e)].$$

Where "k_d" is cost of debt,

"k_e" is cost of equity and

"T" is the tax rate on bond return

- a. Use bond information to solve for k_d:
This has to be done using trial and error method. Given that market price is higher than the par value certainly the IRR would be less than 12%. Of course at 12%, the market value would be Rs 1000.

Now, the market value at x % would be given by the formula:

$$120 * a_n + 1000 v^n \text{ where } n=20.$$

For 10% the value of a_n is 8.5136, v^n is .14864 and the value of the bond is 1170.27 < 1273.85637.

Hence the cost is less than 10%.

Using the value of 9% the calculated value will come to $120 * 9.1285 + 1000 * .17843 = 1273.85$
? 1273.8564. Hence, the cost of debt = 9%.

- b. To solve for k_e, we can use the Capital Asset Pricing model equation and find beta. Using the data given in part 2 we can solve for beta which comes to 1.5 (=0.5*1.05/.35). So $k_e = 0.0635 + (0.1135 - 0.0635)(1.5) = 0.1385 = 13.85\%$.
- c. Plug these values into the WACC equation and solve:
 $WACC = [(0.7)(0.09)(1 - 0.35)] + [(0.3)(0.1385)] = 0.0825 = 8.25\%$.

[Total 10]

Solution 16

(All amounts in Rupees '000s)

	t = 0	t = 1	t = 2	t = 3	t = 4
Initial cost	-2,000				
Change in NWC (1 Mark)	-100				
Initial outlay	-2,100				
Sales (1 Mark)		1,000	2,000	2,000	1,000
Operating Costs (1 Mark)		(500)	(1,000)	(1,000)	(500)
Depreciation (1 Mark)		(500)	(500)	(500)	(500)
Op. Inc. bef. Taxes (1 Mark)		0	500	500	0
Taxes (40%) (2 Mark)		0	200	200	0
Oper. Inc. from project (1 Mark)		0	300	300	0
Add Back Depr. (1 Mark)		500	500	500	500
Change in other products (1 Mark)		(250)	(250)	(250)	(250)
Return of NWC (1 Mark)					+ 100
Net cash flow (NCF) (1 Mark)	-2,100	250	550	550	350
Present value Factor @ 12%	1.000	.893	.797	.712	.636
Present Value	-2,100	223.25	438.35	391.60	222.60
Net Present Value (2 mark)	-824.2				

Entering the NCF amounts into the cash flow register (at 12%) gives you a NPV of -Rs.824, 418.62. (Exact calculation)

[Total 14]**Solution 17**

Net income	480,000
Add back depreciation (1 Marks)	100,000
Plus decrease in other assets:	
ARs (1.5 Marks)	5,000
Inventory (1.5 Marks)	10,000
Less decrease in liabilities: (1 Mark)	
APs	(20,000)
Net cash from operations (1 Mark)	575,000

[Total 6]**Solution 18**

First, find the amount of current assets:

Current ratio = Current assets/Current liabilities

Current assets = (Current liabilities)*(Current ratio)
= Rs.375,000 * (1.2) = Rs.450,000.

Next, find the accounts receivables:

DSO = Accounts Receivables(AR)/(Sales/365)

AR = DSO * (Sales) * (1/365)
= (40)*(1,200,000)*(1/365) = Rs.131,507.

Next, find the inventories:

Inventory turnover = Sales/Inventory

Inventory = Sales/(Inventory turnover)
= Rs.1,200,000/4.8 = Rs.250,000.

Finally, find the amount of cash:

$$\text{Cash} = \text{Current assets} - \text{AR} - \text{Inventory} \\ = \text{Rs.}450,000 - \text{Rs.}131,507 - \text{Rs.}250,000 = \text{Rs.}68,493.$$

[Total 4]

Solution 19

	Company A	Company B
<u>Profit before interest and tax</u>	<u>180000</u> =25.7%	<u>200000</u> =22.2%
Average total assets	700000	900000
<u>Debenture interest expense</u>	<u>30000</u> =15%	<u>144000</u> =24%
Debentures	200000	600000
<u>Profit after tax</u>	<u>80000</u> =22.9%	<u>31000</u> =15.5%
Average shareholders' equity	350000	200000
<u>Debentures</u>	<u>200000</u> =57.14%	<u>600000</u> =300%
Avg shareholders' equity	350000	200000
<u>Profit before interest and tax</u>	<u>180000</u> =6 times	<u>200000</u> =1.39 times
Debenture interest expense	30000	144000

The Profit before interest and tax return on assets for company A was 25.7%, while company B's return is lower at 22.2%. However, the average interest rate on company B's borrowing is much higher at 24% compared to company A's 15%. Besides, company A has a debt to equity ratio of 57.14% and company B's ratio is 300%

Thus company B is far more leveraged than company A. company B's interest coverage was 1.39times, whereas company A had a coverage of 6times

The return on equity provides a basis for determining which of the two companies was more successful in using leverage. Company A's return on equity was 22.9% compared to company B's 15.5%.

Clearly, company B was over leveraged and ended up losing by trading on the equity because the interest rate on its borrowings was greater than what could be justified by the return on its assets.

[Total 7]

Solution 20

Under Capital Asset Pricing Model(CAPM), the expected return depends on the risk free rate and the risk premium. The risk premium depends upon the Beta(β) factor. Now, the securities will be correctly priced, if the reward to risk ratio for different securities are same. The reward to risk ratio is:

$$\text{Reward to risk ratios} = \frac{(\text{Exp. Return} - \text{Risk free rate})}{\beta}$$

$$\text{Security X} = \frac{0.22 - 0.07}{1.8} \\ = 8.33\%$$

$$\text{Security Y} = \frac{0.2040 - 0.07}{1.6} \\ = 8.38\%$$

As the expected return of the portfolio, "Rm", is not given, it is not possible to find out whether both securities are correctly priced or not. However, on the basis of reward to risk ratio, it can be argued that for security Y, the ratio is 8.38% which is higher than that of security X, i.e., 8.33%. So the security Y is providing more than proportionate reward vis-a-vis the security X. In other words, it means that the security Y is under priced.

In case both security correctly priced, then they must offer same reward to risk ratio. The risk free rate would have to be such that:

Let 'Rf' be risk free rate,

$$\frac{(22\% - Rf)}{1.6} = \frac{(20.4\% - Rf)}{1.8}$$

i.e. $R_f = 7.6\%$

So both securities would be correctly priced if the risk free rate is 7.6%

[Total 6]

Solution 21

**Skyline Ltd.
Profit and Loss Account
For the year ended Nov 30, 2004**

Revenues		Amount(Rs.)
Fee revenue earned (1 mark)		41620
Interest revenue (1 mark)		170
Total		41790
Expenses		
Salaries (1 mark)	13500	
Supplies (1 mark)	2730	
Electricity	460	
Telephone	340	
Depreciation (0.5 mark)		
Computers (1 mark)	3750	
Office equipment (0.5 mark)	525	
Rent (1 mark)	11000	
Income tax	2500	
Total		34805
Total Profit (0.5 mark)		6985

Explanation:

Fee revenue earned: $33,320 + 6,200 + 2,100 = 41,620$

Interest revenue : $3,400 * 15\% / 3 = 170$

Salaries: $10,900 + 2,600 = 13,500$

Supplies: $3970 - 1240 = 2730$

Rent: $12000 - 1000 = 11000$

Depreciation:

Computers: $15000 * 9/12 * 1/3 = 3750$

Office equipment: $9000 * 7/12 * 1/10 = 525$

**Skyline Ltd.
Balance Sheet
As on Nov 30, 2004**

Assets	Amount(Rs.)	Amount(Rs.)
Computers	15000	
Less: Dep. (0.5 mark)	3750	11250
Office Equipment	9000	
Less: Dep. (0.5 mark)	525	8475
Office Supplies (0.5 mark)		1240
Debtors		1710
Cash		940
Bills Receivable		3400
Prepaid Rent (0.5 mark)		1000
Revenue receivable (¼ mark)		6200
Interest receivable (0.5 mark)		170

Total		34385
Liabilities		
Creditors		3100
Unearned fees (1 mark)		700
Salaries payable (0.5 mark)		2600
Income tax payable (0.5 mark)		2500
Share Capital		20000
Retained earnings (¼ mark)		5485
Total		34385

Explanation:

Interest receivable: not shown in trial balance so both side adjustments has to be given
 Unearned fees: $2800 - 2100 = 700$

Statement of retained earnings:

Retained earnings (1/12/2003)

Net profit for the year

6985

Less Dividends

1500

5485

[Total 15]

[Total 100]
