Institute of Actuaries of India

Subject CT2 – Finance and Financial Reporting

April 2016 Examination

INDICATIVE SOLUTION

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.

Solution 1: **D** **[2]**

Solution 2: **D** **[2]**

Solution 3: **A** **[2]**

Solution 4: **D** **[2]**

Solution 5: **B** **[2]**

Solution 6: **C** **[2]**

Solution 7: **B** **[2]**

Solution 8: **B** **[2]**

Solution 9: **D** **[2]**

Solution 10: **A** **[2]**

Solution 11:

i) Rate of depreciation under written down value method = 1- [(1.2/10)^(1/10)] = 19.106%

	Actual charge of depreciation		
Year No.	Method 1	Method 2	Method 3
1	19,10,566	16,00,000.00	22,50,000.00
2	15,45,540	14,40,000.00	20,00,000.00
3	12,50,254	12,80,000.00	17,50,000.00
4	10,11,385	11,20,000.00	15,00,000.00
5	8,18,153	9,60,000.00	-
6	6,61,840	8,00,000.00	-
7	5,35,391	6,40,000.00	-
8	4,33,101	4,80,000.00	-
9	3,50,354	3,20,000.00	-
10	2,83,417	1,60,000.00	-

[4]

ii) Book value of asset under method 3 = (100% - 22.5% - 20.0% - 17.5% - 15.0%) × 10 million = 2.50 million
Tax saved on capital loss at the end of Year 10 = (2.50 – 1.2) × 20% = 2, 60,000

Present value of tax benefit on depreciation for each of the three methods is as follows

	Tax benefit on depreciation and capital loss on sale of machine			
Year No.	Method 1	Method 2	Method 3	Discounting factor
1	5,73,170	4,80,000	6,75,000	0.8929
2	4,63,662	4,32,000	6,00,000	0.7972
3	3,75,076	3,84,000	5,25,000	0.7118
4	3,03,415	3,36,000	4,50,000	0.6355
5	2,45,446	2,88,000	-	0.5674
6	1,98,552	2,40,000	-	0.5066
7	1,60,617	1,92,000	-	0.4523
8	1,29,930	1,44,000	-	0.4039
9	1,05,106	96,000	-	0.3606
10	85,025	48,000	2,60,000	0.3220
PV of tax benefit	**19,97,041.19**	**19,73,951.16**	**20,07,358.96**	

Since method 3 leads to a highest tax benefit in present value terms, Infinity Pvt. Ltd should select method 3 for charging depreciation

[5]

iii) Key assumptions used in part ii)

- The company will make taxable profits in each of the 10 years. This is even more crucial given that it is the first year of operations and usually there are significant capital and revenue costs in the initial few years.
- The interest rates don't reduce significantly. This is because the present value results are quite close. Even a fall of 1% in the hurdle rate would alter the decision.
- The company has sufficient capital gains in the 10^{th} year to offset the capital loss.
- The tax rates remain unchanged over the 10 year period

[2]

iv) Implications of the error

- Sales reduced by INR 125,000
- Accounts receivable reduced by INR 125,000
- Purchases reduced by INR 100,000
- Gross profit reduced by INR 25,000
- Advertisement expenses increased by INR 100,000
- Net profit before tax reduced by INR 125,000
- Net profit after tax reduced by INR 87,500
- Provision for tax reduced by INR 37,500

[4]

v) Profit after depreciation, interest and provision for taxes as reported on 10th April 2017 is INR 1.4 million

Profit after depreciation, interest but before provision for taxes shall be [INR 1.4 million÷ (1-30%)] = INR 2 million

Provision for taxes = 2 million – 1.4 million = INR 0.6 million

Let the loan taken be "X". Hence interest paid on it shall be 0.1 X
Interest cover = Profit before interest and tax ÷ Interest = (0.1X + 2 million) ÷ 0.1X = 5
Hence loan = X = INR 5 million

EPS = Profit after interest and tax ÷ Number of equity shares = 14
Hence number of equity shares issued = 1.4 million ÷ 14 = 0.1 million

As each share has a face value of INR 150, equity share capital = 0.1 million shares × 150 = INR 15 million

Current liabilities = Total of the Statement of financial position – Equity share capital – Reserves – Long term debt – Provision for taxes = 25 million – 15 million – 1.4 million – 5 million – 0.6 million = INR 3 million

Current assets = Current ratio × Current liabilities = 5.75 × 3 million = INR 17.25 million

Non-current assets = Total of the Statement of financial position – Current assets = 25 million – 17.25 million = INR 7.75 million

After allowing for the implications of the error mentioned in sub-question iv), the Statement of financial position shall appear as follows

Particulars	INR
Non current assets	7,750,000
Current assets	17,125,000

Total assets	24,875,000
Equity share capital	15,000,000
Reserves	1,312,500
Long term debt	5,000,000
Current liabilities	3,000,000
Provision for taxes	562,500
Total liabilities	24,875,000

[8]

[23 Marks]

Solution 12:

i) Advantages of compliance with international accounting standards

- They eliminate, or at least reduce, variations between companies in the way they prepare accounts. This improves the ability to compare the financial statements across various entities operating in the country
- The discussion process leading up to a standard being issued focuses attention on particular areas for debate about accounting practice
- They oblige companies to disclose more information than that required by national laws
- They allow some degree of flexibility in a way that legislation often does not. This is even more crucial for a newly formed country

Disadvantages of international accounting standards

- The sets of rules contained in the standards may not be appropriate to all companies in all circumstances
- Standard-setting may not be entirely objective (some standards in the past have been the subject of government pressure or industry lobbying).
- Standards often allow more than one alternative treatment, which negates the attempt to ensure conformity between companies
- Some standards are so general as to be meaningless, while others are far too detailed

[4]

ii) Sources of regulations influencing the preparation of financial statements for companies

- Principles, concepts and conventions of accounting
- National company laws
- Stock exchange requirements
- Best practices in accounting followed by leading companies from time to time

[2]

iii) Additional information available from cashflow statement

- Whether the core business operations of the entity have led to a net cash inflow or outflow. This is important because even if the entity generates a lot of profit, it may not lead to any positive cash inflow as the profits may get locked up in current assets like accounts receivable and inventory. If an entity is regularly demonstrating profits every year for the last few years but is not generating positive cash flows, it could be an early warning that the revenue accounts are being manipulated
- It is the single statement that summarises the change in the financial position since the previous year. It shows what is the entity's investment in various assets, how these have been funded, what are the cash flows generated from core activities after removing the impact of subjective decisions on depreciation, valuation of inventory etc. in the current financial period

[2]

[8 Marks]

Solution 13:

Derivative positions	Scenario 1-Margin receivable/(payable) in INR	Scenario 2- Margin receivable/(payable) in INR
Long position in 5 futures contract of Bata Steel (Lot Size-1000, Strike-280)	=(305-280)×1000×5=125,000	=(269-280)×1000×5=(55000)
Long position in 10 put option contracts of Bata Motors (Lot Size-500, Strike-500)	=(500-480)×500×10=100,000	Nil as share price higher than strike price
Short position in 7 call option contracts of BCS (Lot Size-100, Strike-1100)	=(1150-1100)×100×7=35,000	Nil as share price lower than strike price
Total margin receivable/(payable)	260,000	(55000)

[6 Marks]

Solution 14:

- Issue convertible debentures with the conversion option available 5 years from now. This will not only enable it to raise debt at a lower rate but will automatically convert some of its debt in to equity after 5 years. However if after 5 years, the value of the company increases significantly, the company could end up issuing equity capital at a substantial discount. To reduce this risk the conversion option could be structured as fixed date and fixed terms

- Add warrants to the debentures with the warrants being exercisable 5 years from now. It should also allow the warrants to trade separately thereby increasing the marketability of the debentures
- Raise debt from another country where the interest rates are lower and expected to remain low for at least the next 5 years. This exposes Ishaant Pvt. Ltd to the currency risk. The bonds could be issued with a call option after say three years which the company could exercise should it anticipate substantial depreciation of the domestic currency. This would also be useful if the credit rating improves in the future and local banks are willing to lend at competitive rates in the future

[3 Marks]

Solution 15:

Institution	Investment Bank	Pension Scheme	Life Insurance Company
Role	Advice Companies and help companies raise finance	Channel savings for retirement into long term capital markets.	Pool mortality and investment risks by channeling savings into long term capital markets.
Application of Funds	Receive fees for advice, underwriting commission, fund management, Eurobond dealing, trusteeship, and bill acceptance. Borrow money by running banking accounts and issuing certificates of deposit.	Contributions from employers and employees only. No borrowings.	Premium income from policyholders. Do not usually borrow money.
Sources of Funds	Invest in bills and provide loans and leases to companies.	Typical fund invests in equities and longer-dated loan securities and company debt. Also some investment in overseas securities. Small proportion of the assets invested in property, money market	Typical fund invests in a mixture of equities and short and long fixed interest securities. May have some investment in overseas securities, property, money market investments and index-linked gilts.

		investments and index linked gilts and other classes, such as commodities and infrastructure, are becoming more common.	

[7 Marks]

Solution 16:

i) Calculation of Net outflows

Option 1					Rs. In Mn
Years	Repayment of Principal	Interest	Other Expenses	Tax Savings	Net Outflow
0	-	-	5.00	0	5.00
1	100.00	75.00	-	20.00	155.00
2	100.00	60.00	-	15.00	145.00
3	100.00	45.00	-	11.25	133.75
4	100.00	30.00	-	7.50	122.50
5	100.00	15.00	-	3.75	111.25
Total Outflows	**500.00**	**225.00**	**5.00**	**57.50**	**672.50**

[Tax Savings of 20 in Year 1 includes 1.25 Tax Savings because of initial flows. Tax savings are available at year end and hence included in Year 1. Some students will take 1.25 Tax Savings in Year 0 and 18.75 in Year 1]

Option 2				US$ in Mn
Years	Repayment of Principal	Interest	Other Expenses	Net Outflow
0	-	-	0.20	0.20
1	1.60	0.640	-	2.24
2	1.60	0.512	-	2.11
3	1.60	0.384	-	1.98
4	1.60	0.256	-	1.86
5	1.60	0.128	-	1.73
Total Outflows	8.00	1.920	0.20	10.12

Exchange Rate
62.50
65.00
68.00
71.00
74.00
77.00

Option 2						Rs. In Mn
Years	Repayment of Principal	Repayment excess due to Foreign Exchange Fluctuation	Interest	Other Expenses	Tax Savings	Net Outflow
0	-	-	-	12.50	3.13	9.38
1	100.00	4.00	41.600	-	11.40	134.20
2	100.00	8.80	34.816	-	10.90	132.71
3	100.00	13.60	27.264	-	10.22	130.65
4	100.00	18.40	18.944	-	9.34	128.01
5	100.00	23.20	9.856	-	8.26	124.79
Total Outflows	**500.00**	**68.00**	**132.480**	**12.50**	**53.25**	**659.74**

[8]

ii) Calculation of NPV

Pre-tax cost of capital is 12%. Post tax cost of capital is 12*(1-25%) = 9%

Option 1			Rs. In Mn
Years	Net Outflow	Discount Factor @ 9%	Present Value
0	5.00	1.000	5.00
1	155.00	0.917	142.135
2	145.00	0.842	122.04
3	133.75	0.772	103.28
4	122.50	0.708	86.78
5	111.25	0.650	72.30
Total Outflows	**672.50**		**531.53**

Option 2			Rs. In Mn
Years	Net Outflow	Discount Factor	Present Value
0	9.38	1.000	9.38
1	134.20	0.917	123.12
2	132.71	0.842	111.70
3	130.65	0.772	100.88
4	128.01	0.708	90.68
5	124.79	0.650	81.11
Total Outflows	**659.74**		**516.87**

The present value of Option 2 is lower than Option 1 and hence company should go for Option 2 of loan in US$.

[4]

iii) Risks involved-
The company should be careful of its assumptions of the future exchange rates.

Since the gap of present value between the two options is small, a 3-4% (any quantification of small number up to 5% should be given credit) adverse movement in the future exchange rate could prove option 2 to be more expensive.

[2]

iv) In case the company has good volumes of exports, then it may help the company to hedge the future payments with outflows. In that case the company may take a lenient view of the possible exchange rate risk.

[1]
[15 Marks]

Solution 17:

Cost of Equity

Risk free return = yield on the central government bond

= IRR on the bond

By trial and error –
Trying at 6% - 500*v^10 + 37.5 * (1-v^10) / I = 555.2
Thus risk free rate can be taken as 6%

Calculation of beta for Growth Ltd.

Months	Rmj	Rij	Rmj – Rm	Rij - Ri	(Rmj - Rm)*(Rij - Ri)	(Rmj-Rm)^2
1	3.500%	4.600%	2.917%	4.0%	0.11569%	0.08507%
2	1.500%	3.000%	0.917%	2.4%	0.02169%	0.00840%
3	-1.200%	-4.000%	-1.783%	-4.6%	0.08263%	0.03180%
4	2.500%	-1.000%	1.917%	-1.6%	-0.03131%	0.03674%
5	-4.000%	-6.000%	-4.583%	-6.6%	0.30403%	0.21007%
6	-3.000%	-5.000%	-3.583%	-5.6%	0.20186%	0.12840%
7	-2.000%	-3.000%	-2.583%	-3.6%	0.09386%	0.06674%
8	1.500%	3.000%	0.917%	2.4%	0.02169%	0.00840%
9	1.500%	3.000%	0.917%	2.4%	0.02169%	0.00840%
10	1.700%	4.000%	1.117%	3.4%	0.03759%	0.01247%
11	2.000%	5.000%	1.417%	4.4%	0.06186%	0.02007%
12	3.000%	4.000%	2.417%	3.4%	0.08136%	0.05840%
	Rm	Ri			CoVar(I,m)	Var(m)
	0.583%	0.63%			0.09206%	0.06136%

Beta for ABC Ltd. = Co-variance (i,m) / Variance (m)

= 1.5

(5 marks, one mark each for Rm, Ri, Covariance, Variance and Beta)

Market return rate = Average of market benchmark return = Rm = 0.5833%*12 = 7%

Cost of capital = Risk free rate + Beta of equity X (Market return rate – risk free rate)

= Rf + B * (Rm – Rf)

= 6% + 1.5 * (7%-6%)

= 7.5%

Net Cost of Debt for Current Debentures = Gross Cost of Debt * (1- Tax rate)

= 7.75% * (1 – 20%)

= 6.2%

Weighted average cost of capital = Cost of Equity X Equity Proportion + Cost of Debt X Debt Proportion

= 7.5% * 500/700 + 6.2% * 200/700

= 7.129%

Net Cost of Debt for New Debentures = Gross Cost of Debt * (1- Tax rate)

= 8.375% * (1 – 20%)

= 6.7%

Let new value to Debentures be 'y'
New cost of capital = 7.129% * 700 / (700+y) + 6.7% * y / (700+y)
To set this equal to 7% we get value of y as-
7% = 7.129% * 700 / (700 + y) + 6.7% * y / (700+y)
y = 300
New Debentures of Value Rs. 300 Mn to be issued.

[18 Marks]

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