SUGGESTED SOLUTIONS

13304–Strategic Management Accounting

CA Professional (Strategic Level I) Examination
December 2013

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF SRI LANKA

Answer No. 01

Figures are in Rs. thousands

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Machinery and residual value	(300,000)	(100,000)	-	-	-	50,000
Working Capital **(W1)**	(100,000)	(15,500)	(16,800)	(18,191)	(19,680)	-
WC Recovery **(W1)**	-	-	-	-	-	170,171
Sale of new technology	(1,000)	-	-	-	-	-
Rent of sister company **(W2)**	-	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)
Sales	-	556,500	639,450	685,314	638,141	638,141
Labour	-	(52,800)	(60,500)	(69,212)	(70,277)	(72,473)
Material	-	(264,000)	(314,600)	(352,715)	(373,346)	(386,522)
Overheads **(W3)**	-	(49,000)	(49,000)	(51,450)	(46,200)	(42,998)
Tax payment **(W4)**	-	(4,397)	(8,489)	(9,312)	(17,678)	(22,218)
Net cash flow (NCF)	(401,000)	69,303	188,561	182,933	109,461	332,601
DR @ 20%	1.000	0.833	0.694	0.579	0.482	0.402
Discounted CF	(401,000)	57,730	130,861	105,918	52,760	133,706
Net present value		79,975				

Calculation of IRR

At the discount rate of 25%	1	0.800	0.640	0.512	0.410	0.328
PV	(401,000)	69,303	188,561	182,933	109,461	332,601
Discounted CF	(401,000)	55,443	120,679	93,662	44,879	109,093
Net present value		**22,755**				

IRR = 20% +(5%/(79,975-22,755))*79,975 =   **27.0%**

Recommendation

NPV is positive. Project is recommended.

IRR>WACC. Project is recommendable.

(W1) - Working Capital *(please refer the note)*

-	Year 0	Year 1	Year 2	Year 3	Year 4
Cum. WC in present day terms	100,000	110,000	120,000	130,000	140,000
Multiplied by	*1.00*	*1.05*	*1.05^2*	*1.05^3*	*1.05^4*
Cum. inflation adjusted WC	100,000	115,500	132,300	150,491	170,171
Increase in WC	**100,000**	**15,500**	**16,800**	**18,191**	**19,680**

(2)

(W2) - <u>Incremental Rent of 1.5million of IEP's subsidiary</u>

Since the question is silent on the income taxes of IEP and HL's sister company, students are not expected to adjust tax saving on incremental rent. However, if a student has adjusted tax savings, marks will be given according to his/her assumption. If not, full marks could be given for the incremental rental of Rs. 1.5million. Nevertheless, this tax effect cannot be adjusted to HL's tax computation since this is a group adjustment.

(W3) - <u>Overhead Costs</u>

	Year 01	Year 02	Year 03	Year 04	Year 05
In present terms	120,000	120,000	120,000	115,000	110,000
Rent of HL	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Depreciation (400-50)/5*	(70,000)	(70,000)	(70,000)	(70,000)	(70,000)
In present terms (Cash flow)	49,000	49,000	49,000	44,000	39,000
Multiplied by	*1.00*	*1.00*	*1.05*	*1.05*	*1.05^2*
Inflation adjusted overheads	**49,000**	**49,000**	**51,450**	**46,200**	**42,998**

(W4) - <u>Tax payment</u>

	Year 01	Year 02	Year 03	Year 04	Year 05
Sales	556,500	639,450	685,314	638,141	638,141
Less Material and Labour	(316,800)	(375,100)	(421,927)	(443,622)	(458,995)
Less Overheads (nominal)	(49,000)	(49,000)	(51,450)	(46,200)	(42,998)
Less Rent of HL	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Depreciation allowance	(133,333)	(133,333)	(133,333)	-	-
Residual value of machinery	-	-	-	-	50,000
Assessable income	56,367	81,017	77,604	147,318	185,148
Claim-Tax losses	(19,728)	(10,272)	-	-	-
Net taxable income	36,638	70,745	77,604	147,318	185,148
Tax at 12%	**4,397**	**8,489**	**9,312**	**17,678**	**22,218**

<u>Treatments in the appraisal for</u>

* Cost of development of Rs, 400,000 is a sunk cost.

* HL's rent expense of Rs. 1Mn is not an incremental cost to the group.

* Tax adjusted interest is already considered in the after tax WACC.

* Cash flows are subject to inflation at different rates. Therefore it is impossible to discount at the real DR. As such, cash flows should be stated at nominal values and discounted by nominal DR.

Part (d)
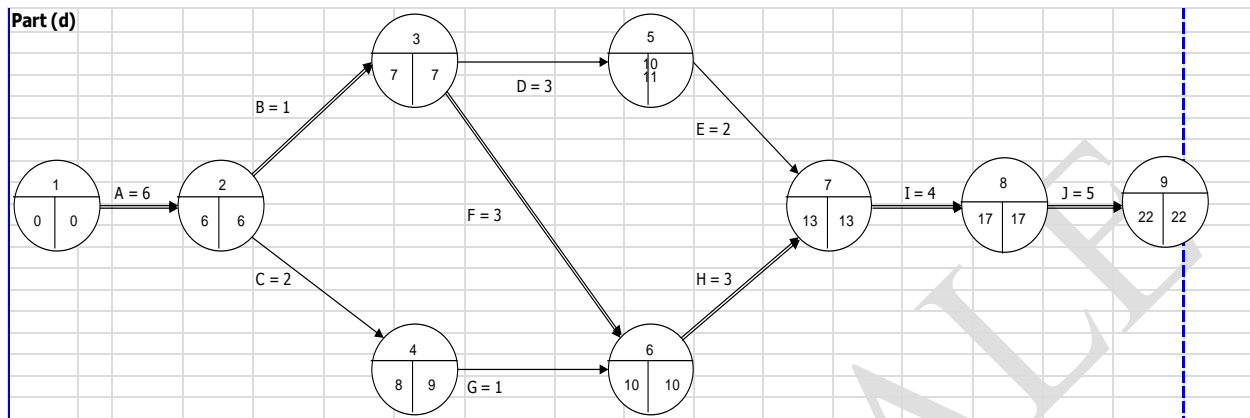
(i)   Critical Path   = A, B, F, H, I and J

Normal Duration   = 22 Weeks
Normal cost of installation (Rs.)   = 6,000,000 + (22*50,000) = 7,100,000/-

(ii) *   Activity D is not in the Critical Path therefore normal duration cannot be reduced by crashing Activity D.

    *   Crashing Activity I and J by the maximum time, HL can save 4 weeks, without affecting the Critical Path

Therefore:

Rs. '000

Effect to the cash flows	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Saving on weekly overheads (50,000*4 weeks)	200	-	-	-	-	-
Saving on recruitment expenses	1,000	-	-	-	-	-
Saving on labour charges (inflation adjusted)	-	220	242	266	293	322
Additional cost for installation						
Activity I = 400,000*2		(800)	-	-	-	-
Activity J = 600,000*2		(1,200)	-	-	-	-
Effect to tax payment*note*		46	43	40	(35)	(39)
Net effect	1,200	(1,734)	285	306	258	283
DR 20%	1.000	0.833	0.694	0.579	0.482	0.402
PV of effect	1,200	(1,444)	198	177	124	114
NPV of the effect	**369**					

It is recommended to speed up the activities at additional cost since it generates a positive effect to the
NPV of the Project.

(4)

(W5) - Calculation of tax effect

Rs. '000

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Tax liable salary decrease		220	242	266	293	322
Increase in depreciation allowance		(600)	(600)	(600)	-	-
Tax liable net saving		(380)	(358)	(334)	293	322
Effect to tax liability @12%		46	43	40	(35)	(39)

Answer No. 02

(a) Material price variance at the time of purchasing

<u>For the purpose of evaluating performance of the purchasing officer.</u>

Material price variance = (Std price - Act price) Actual qty purchased

Material A = (650 - 645) 18,300 =	91,500	Fav
Material B = (415 - 430) 13,000 =	(195,000)	Adv
Total material price variance	**(103,500)**	**Adv**

Though Material A variance is favourable overall price variance is an adverse variance. Therefore purchasing officer's performance is not as expected. However the following should also be considered when evaluating his performance;

* Quality of Material A should be checked to ensure they are in expected quality
* Since the standard price of material A is higher than the price of the last purchase, it should be ensured that the standard price is realistically set at the time of making the standards.
* Price of material B has gone up by Rs. 20 per Kg. compared to the last purchase and by Rs. 15/- per Kg. over the standard price. This can be due to general price increase in the market where the purchasing office has no control over.

(b)

	Qty Kgs	Material A & B	Labour	Overheads
		Equivalent Units		
Opening WIP (W1)	3,000	-	1,500	1,500
Completed good ex-opening stock	22,500	22,500	22,500	22,500
Closing WIP (W2)	4,000	4,000	2,400	2,400
Total equivalent units (Kgs)		**26,500**	**26,400**	**26,400**

W1 - Opening WIP Kgs.	3,150	50% completed
Normal waste	1 Kg	when producing 10 Kgs.
At 50% completion level	1 Kg * 1/2 =	0.50
Output + balance normal waste	= 10 +(1-1/2) =	10.50

Final output quantity	= 3,150/10.50 =	3,000
W1 - **Opening WIP Kgs.**	4,160	60% completed
Normal waste	1 Kg	when producing 10 Kgs.
At 60% completion level	1 Kg. * (1 - 0.6) =	0.40
Output + balance normal waste	=10 + 0.40 =	10.40
Final output quantity	= 4,160/(10.4) =	4,000

Material utilisation	Opening	Purchase	Closing	Utilised	Price
Material A	2,300	18,300	(4,000)	16,600	650
Material B	4,000	13,000	(3,500)	13,500	430
				30,100	

(c)

(i) Material price variance = (Std price - Act price) Actual qty utilised

Material A = [650*16,600] - [(645*2,300) + (645*14,300)] = 83,000 Fav

Material B = [415*13,500] - [(410*4,000) + (430*9,500)] = (122,500) Adv

Total material price variance **(39,500)** **Adv**

(ii) Material usage variance = (Std usage - Act usage) Std price

Material A = [(0.6*26,500) - 16,600] 650 = (455,000) Adv

Material B = [(0.5*26,500) - 13,500] 415 = (103,750) Adv

Total material price variance **(558,750) Adv**

(iii) Labour rate variance = (Std rate - Act rate) Actual hours
= (400 - 390) (2.34mn/390) hrs = 60,000 Fav

(iv) Labour efficiency variance = (Std hours - Act hours) Std rate
= [(26,400*12/60)- 6,000] 400 = (288,000) Adv

(v) Variable overhead expenditure variance = (Std rate/hr - Act rate/hr) Act hours
= (300 - 250) 6,000 = 300,000 Fav

(vi) Variable overhead efficiency variance = (Std hours - Act hours) Std rate
= (26,400*12/60 - 6,000) 300 = (216,000) Adv

(vii)   Fixed overhead expenditure variance = Btd FOH - Act FOH
        = (500*12/60)*25,000 - 2.7 million =   (200,000)   Adv

(d)   Material Mix Variance

	Material A	Material B
Total Qty actually used =	16,600 +	13,500 =	30,100 Kgs

Material Type	Standard Recipe	Actual usage in Std Mix	Actual usage in Act Mix	Variance Qty	Standard Price	Variance Rs.	
Material A	0.6	16,418	16,600	(182)	650	(118,300)	Adv.
Material B	0.5	13,682	13,500	182	415	75,530	Fav
	1.1	30,100	30,100	(0.00)		(42,770)	Adv

Material Yield Variance for actual equivalent output of 26500

Material Type	Std Mix for Actual equi. units	Actual usage in Std Mix	Variance Qty	Standard Price	Variance Rs.	
Material A	15,900	16,418	(518)	650	(336,700)	Adv
Material B	13,250	13,682	(432)	415	(179,280)	Adv
	29,150.0	30,100			515,980)	Adv

Actual mix is not according to the expected mix and 182Kgs of material B have been over-used instead of using material A. Therefore this has generated an adverse effect to the usage variance by Rs. 42,770.

The yield of actual consumption is lower than the expected yield. 518Kgs and 432Kgs of material A and B respectively have been used in excess over the expected mix. This has generated a negative impact to the usage variance amounting to Rs. 515,980.

Answer No. 03

(a)   Expected Audience Size

Size	Probability	EV
300	0.5	150
400	0.3	120
500	0.2	100
		370

Expected revenue   370 x 2500

                                              925,000

Expected contribution from confectionery sales

C / Person	Probability	EV
300	0.3	90
500	0.5	250
1000	0.2	200
		540
Expected contribution	540 x 370	199,800

Total Revenue/Contribution	925,000 + 199,800	1,124,800
Cost of the event		(1,000,000)
Expected profit		124,800

Since it is expected to take a profit of Rs 124,800 it is financially worthwhile to stage the drama

(b)

		Audience size and Probability		
		300	400	500
		0.5	0.3	0.2
Contribution from confectionery sales	Probability			
300	0.3	(160,000)	120,000	400,000
		0.15	0.09	0.06
500	0.5	(100,000)	200,000	500,000
		0.25	0.15	0.10
1000	0.2	50,000	400,000	750,000
		0.10	0.06	0.04

(c) According to the above pay off table there is a 40% (15% + 25%) probability of making a loss. Thus the probability of making a profit is 60%

(d) If perfect information is available, events where losses are incurred could be avoided.
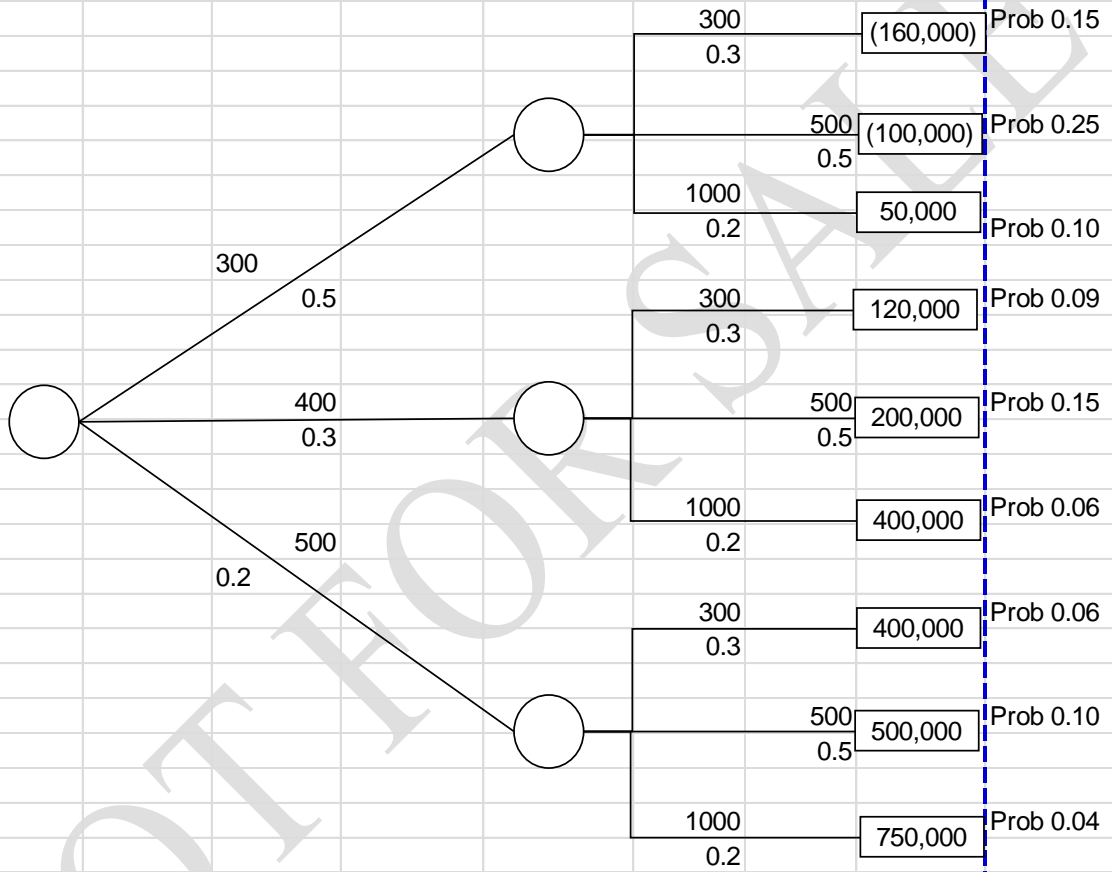The expected value of losses that can be avoided

160,000 x 0.15	24,000
100,000 x 0.25	25,000
	49,000

Therefore maximum amount payable for perfect information is Rs 49,000/-

(8)

Alternate answer for (b)

	300 0.3	(160,000)	Prob 0.15
300 0.5	500 0.5	(100,000)	Prob 0.25
	1000 0.2	50,000	Prob 0.10
	300 0.3	120,000	Prob 0.09
400 0.3	500 0.5	200,000	Prob 0.15
	1000 0.2	400,000	Prob 0.06
	300 0.3	400,000	Prob 0.06
500 0.2	500 0.5	500,000	Prob 0.10
	1000 0.2	750,000	Prob 0.04

(9)

Answer No. 04

(a) <u>Arms length standard</u>

Tax authorities require that the transfer prices be tested using an "arms length standard". Under this approach, a price is considered appropriate if it is within a range of prices that would be charged by independent parties dealing at arms length.

(b) Transfer pricing manipulation refers to trade between related parties meant to manipulate market or to deceive tax authorities.

Ex: XYZ group have 3 subsidiaries

Subsidiary X - Local plantation

Subsidiary Y - In a tax haven usually offshore

Subsidiary Z - In a foreign company (USA)

X sells its produce to Y at an artificially low price resulting a low profit and low tax for X. Y then sells to Z at an artificially high price almost at a price Z will sell in USA. Z will thus also have low profit and tax.

(c)

(i)

Purchase cost from outsider	1000 units x Rs1350	1,350,000
Savings in VC by reducing Division A output	1000 units x Rs 1200	1,200,000
Net cost to the company as whole by buying from outside		150,000

Company as a whole will not benefit if Division C buys on the outside market

Any transfer price between Rs 1,200 and Rs 1,350 per unit will achieve goal congruence. The transfer price may be set at Rs 1,350 (market price) which will be acceptable to both A and C

(ii)

Purchase cost from outsider	1000 units x Rs1350	1,350,000
Savings in VC by reducing Division A output	1000 units x Rs 1200	1,200,000
Savings due to A's facilities assigned to other operators		180,000
Net benefit to the company as whole by buying from outside		30,000

Company as a whole will benefit if Division C buys on the outside market

(iii)	Purchase cost from outsider	1000 units x Rs1150	1,150,000
	Savings in VC by reducing Division A output	1000 units x Rs 1200	1,200,000
	Net benefit to the company as whole by buying from outside		50,000

Company as a whole will benefit if Division C buys on the outside market

The transfer price may be set at Rs 1,200 (variable cost to C) so that C will decide to buy from outside and A will not produce which are in the best interests of the divisions as well as of the company as a whole

(iv)	Purchase cost from outsider	1000 units x Rs1350	1,350,000
	Savings in VC by reducing Division A output	1000 units x Rs 1200	1,200,000
	Net cost to the company as whole by buying from outside		150,000
	A's sales to other customers	1000 units x Rs1550	1,550,000
	Variable manufacturing costs	1000 units x Rs 1200	1,200,000
	Variable marketing costs		50,000
	Contribution margin from selling outside		300,000

Company as a whole will benefit if Division C buys on the outside market. The Rs 150,000 disadvantage is more than offset by the Rs 300,000 contribution margin of A's sale of 1,000 units to outside

Answer No. 05

(a)

(i) The principle behind zero based budgeting is that the budget for each cost centre should be prepared from scratch. Every item of expenditure must be justified as though the activities were taking place for the first time. Without approval budget allowance is zero.

Zero based budgeting rejects the assumption inherent in incremental budgeting that this year's activities will continue at the same volume next year, and that next year's budget can be based on this year's cost plus and extra amount for expansion and inflation.

(ii) 1   Volume of extra management time and paper work required

     2   It may require management skills which BBZ might not possess, management will have to be trained.

     3   BBZ may not have systems capable of providing the information required to implement this approach.

     4   It will be difficult to rank activities which appear equally vital, particularly to rank activities with qualitative rather than quantitative benefits

(b)

(i) Cash budget

	Jan	Feb	Mar	Apr	May	Jun
Receipts from training courses (W)	6,667	25,333	36,000	42,667	54,667	54,667
Receipts from workshops	50,000	80,000	100,000	10,000	120,000	60,000
	56,667	105,333	136,000	152,667	174,667	114,667
Expenditure						
Part time wages	-	25,000	40,000	40,000	50,000	60,000
Permanent employee salaries	40,000	40,000	42,000	42,000	42,000	42,000
Rent	6,250			6,250		
Training course expenses (W)	-	3,000	4,500	4,500	6,000	6,000
Workshop expenses	1,000	1,000	1,000	1,000	1,000	1,000
Utility	15,000	6,000	6,000	15,000	6,000	6,000
Furniture				50,000		
Computers					400,000	
	62,250	75,000	93,500	158,750	505,000	115,000
Bank balance b/f	124,600	119,017	149,350	191,850	185,767	(144,567)

(12)

Net receipts/(payments)	(5,583)	30,333	42,500	(6,083)	(330,333)	(333)
Bank balance c/f	119,017	149,350	191,850	185,767	(144,567)	(144,900)

Working - Receipts and expenses on training courses

	Jan	Feb	Mar	Apr	May	Jun	Jul
No. of courses	0	2	3	3	4	4	4
No. of participants	0	10	12	12	14	13	15
Total No. of participants	0	20	36	36	56	52	60
Total fee income	0	20,000	36,000	36,000	56,000	52,000	60,000
Fees received in advance	6,667	12,000	12,000	18,667	17,333	20,000	
Fees received on first day	-	13,333	24,000	24,000	37,333	34,667	
Total receipts	6,667	25,333	36,000	42,667	54,667	54,667	
Expenses @ Rs 1,500	-	3,000	4,500	4,500	6,000	6,000	

(ii)

Cash deficits are expected to be experienced in May and June primarily due to capex. Drop in workshop Revenue is also a factor considering the high margin it generates

Possible actions

1. Arrange an overdraft facility

2. Negotiate an installment payment scheme with the computer supplier

3. Lease the computers

4. Obtain a short term loan from the bank to finance capex

5. Consider delaying capex

6. Strict policy of payment for training courses in advance

7. Speed up collection of workshop revenue

Answer No. 06

(a)

(i) Value chain is the linked set of value creating activities all the way from basic raw material sources through to ultimate end-user product delivered to the customer.

These value creating activities are divided into two categories i.e. primary activities such as Inbound logistics, operation, outbound logistics, marketing and sales, customer service; and support activities such as infrastructure, HRM, Technology, and procurement.

(ii) Value chain can be used in the following manner;

♦ The customer value creating activities should be identified by analysing all the activities of the organisation i.e. both from primary activities and support activities.

♦ The cost drivers for all the above value creating activities should be then identified and resources should be adequately allocated for those activities. The cost should be then closely monitored and cost drivers should properly managed better, without affecting customer satisfaction.

♦ It is also possible to compare the value chain of the company with the value chain of the low cost competitors and manage them better than the competitors do.

♦ Non-value creating activities should be identified and eliminated or controlled within the permitable range. This will further relax the bottom-line of the company

(b)

(i) Current ROL = 12,600 x 2.2 =   27,720

(ii) The outcomes should be arranged in the ascending order

Demand Boxes / week	Probability	Random Numbers
10,000	30%	00 - 29
12,000	40%	30 - 69
15,000	20%	70 - 89
18,000	10%	90 - 99

Delivery period (wk)	Probability	Random Numbers

1	20%	00 - 19	
2	50%	20 - 69	
3	20%	70 - 89	
4	10%	90 - 99	

(iii)

Cycle	Demand (Boxes/week)		Delivery period (wk)		ROL
	Ran. #	Demand	Ran. #	Period	
1	90	18000	15	1	18000
2	25	10000	75	3	30000
3	52	12000	65	2	24000
4	93	18000	85	3	54000

(15)

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