

CA



THE INSTITUTE OF
CHARTERED ACCOUNTANTS
OF SRI LANKA

SUGGESTED SOLUTIONS

KB 2 – Business Management Accounting

June 2017

SECTION 1

Answer 01

Relevant Learning Outcome/s:
1.2.1 Assess the key features of marginal costing and throughput accounting (including different types of measures used in throughput accounting).
1.2.2 Evaluate the use of marginal costing and throughput accounting in stock valuation, profit calculation, and limiting factor (bottleneck resource) decision making.
Study text reference: Page 59

- (a) Contribution in throughput accounting and contribution in marginal costing are based on the same concept.
- (i) They are both calculated as the difference between sales revenue and variable costs.
 - (ii) They are both used to cover an organisation's fixed costs.

In both approaches, the contribution earned can be used to assess the relative earning capabilities of different products in order to determine an optimum production mix.

However, there are differences between the approaches too. For example, in marginal costing, material costs, labour costs and variable overheads are classified as variable costs.

In throughput accounting, most factory costs, with the exception of material costs, are classified as fixed costs.

(b)

	B	N	L
Contribution per unit (Rs.)	112	90	51
Process Y minutes per unit	18	6	3
Contribution per minute (Rs.)	6.22	15	17
Rank	3	2	1
Process time (minutes)	1,400	1,200	600
Production plan	77.78	200	200

(c)

	B	N	L
Return per factory minute	6.67	16.67	20.00
Cost per minute ((33,000 + 5,400)/3,200)	12	12	12
TAR	0.55	1.39	1.67
Rank	3	2	1
Optimum production plan	-	200	200

Note: TAR is less than 1 for B and therefore it should not be produced.

(Total: 10 marks)

Answer 02

Relevant Learning Outcome/s:
1.3.3 Assess environmental accounting (including its importance, types of costs and techniques available)
5.1.1 Define the term “working capital management”.
Study text reference: Pages 117-119, 601-602

(a) (i)

- Cost savings from waste minimisation through recycling and energy saving measures.
- Companies with poor environmental performance may face an increased cost of capital because investors and lenders demand a higher risk premium.
- Pressure group campaigns could cause damage to the reputation and/or additional costs. This can hamper demand and thereby affect revenue generation.
- Present tendency of customers is towards environmental friendly products and manufacturing systems.
- Compliance in environmental regulations will save environmental costs and secure the continuation of operations.

(ii)

- Material cost itself is an environmental cost. Wastage of material is included in the material cost.
- Cost of effluent treatment or waste incineration.
- Labour cost in relation to wastage management etc.
- Cost and penalties of non-compliance with environmental regulations.
- Cost of compliance with environmental regulations.
- Research and development costs related to environmental issues.
- Consumption of energy.

(b) The two main objectives of working capital management are:

- To ensure that the company has sufficient liquid resources to carry out day to day operations (adequate resources to function and grow).
- To improve profitability by keeping investment in working capital to the minimum required.

Sometimes these two objectives conflict with one other. For instance, if the company has a conservative approach to working capital management, they would have ample liquidity. This would in turn reduce profits as excessive funds are tied up in working capital and the company will miss out on profitable opportunities.

These two objectives will often conflict as liquid assets give the lowest returns.

(Total: 10 marks)

Answer 03

Relevant Learning Outcome/s:

3.4.1 Discuss the financial implications of various pricing methods, such as cost-based and market-based pricing (including skimming, penetration, loss leader pricing, premium pricing and price discrimination).

Study text reference: Pages 360, 370

(a) Demand function $\rightarrow Y = a + bX$

$a = \text{Price when demand is zero} = 25 + ((1,000,000/100,000) * 0.50) = \text{Rs. } 30$

$b = 0.50/100,000 = 0.000005$

$P = 30 - 0.000005X$

$TR = X(P) = 30X - 0.000005X^2$

$MR = 30 - 0.00001X$

$VC = MC = 16,500,000/1,000,000 = 16.50$

When profit is maximised, $MR = MC$

$30 - 0.00001X = 16.50$

$X = 1,350,000$

$P = \text{Rs. } 23.25$

Total contribution = $(23.25 - 16.5) * 1,350,000$ 9,112,500

Fixed cost (6,000,000)

Gross profit for the next month 3,112,500

Alternative answer 01

Candidates may use the tabular form to find the optimal solution

Variable cost

<i>Price per unit</i>	<i>Contribution per unit</i>	<i>Demand</i>	<i>Total contribution</i>
24.00	7.50	1,200	9,000
23.50	7.00	1,300	9,100
23.00	6.50	1,400	9,100
22.50	6.00	1,500	9,000

Optimal price is Rs. 23.00 or Rs. 23.50 per unit

Total contribution (Rs.) 9,100,000

Fixed cost (Rs.) (6,000,000)

Gross profit for the next month 3,100,000

Alternate answer 02

$$Y = a + bx \quad (Y = \text{price}, X = \text{quantity})$$

$$TR = YX = ax + bx^2$$

$$MR = \frac{d}{dx} TR = \frac{d}{dx} (ax + bx^2) = a + 2bx$$

$$MR = MC \Rightarrow a + 2bx = MC \Rightarrow x = \frac{MC - a}{2b} \quad (\text{at maximum revenue})$$

$$Y = a + bx = a + b \frac{(MC - a)}{2b}$$

$$Y = a + \frac{MC - a}{2} = \frac{a + MC}{2}$$

$$a = 30, MC = 16.5 \therefore Y = \frac{30 + 16.5}{2} = \text{Rs. } 23.25$$

$$\therefore \text{Price at maximum revenue} = \text{Rs. } 23.25$$

Alternate answer 03

$$\text{Profit (P)} = TR - TC = 30x - 0.000005x^2 - 16.5x - 6000$$

$$\frac{dp}{dx} = 30 - 0.00001x - 16.5$$

$$\text{At max} \quad \frac{dp}{dx} = 0 \Rightarrow 13.5 = 0.00001x$$

$$\Rightarrow x = 1,350,000$$

Alternate answer 04

$$P = 30 - \frac{1}{200,000}x$$

$$\Rightarrow (30 - p) 200,000 = x$$

$$R = xp = (30 - p) p 200,000$$

$$MR = \frac{dR}{dx} = \frac{dR}{dp} \times \frac{dp}{dx} = 200,000 (30 - 2p) \times \left(\frac{-1}{200,000} \right)$$

$$MC = \frac{dc}{dx} = 16.5$$

$$\text{profit maximized when } MR = MC$$

$$\Rightarrow (30 - 2p) = -16.5$$

$$\Rightarrow 2p = 46.5 \rightarrow p = 23.25$$

- (b) A market skimming pricing strategy sets a higher unit price at inception in order to generate profit as quick as possible, and then reduces the price when competitors gradually come into the market offering similar products.

The company can gain advantages from this strategy if the product is highly innovative and unique where consumers are willing to pay a premium price for the product.

However, this strategy may not be appropriate for OGP since there are so many existing suppliers in the market with similar products and the product is not highly technical.

Further, the skimming approach would require the product to have a relatively inelastic demand where the decrease in demand is proportionately lower than the increase in price. Therefore the competitive marketplace does not appear to support the skimming strategy.

(Total: 10 marks)

Answer 04

Relevant Learning Outcome/s:
4.1.1 Discuss decentralisation and different types of responsibility centres (revenue, cost, profit and investment centres)
Study text reference: Pages 555-559, 213

- (a) **Revenue centres:** Usually have authority over sales only, and have very little control over costs. To evaluate a revenue centre's performance, only look at its revenues and ignore its costs and other factors.

Revenue centres have some drawbacks. Their evaluations are based entirely on sales, so revenue centres have no reason to control costs. This kind of free rein encourages the managers to hire extra employees or find other costly ways to increase sales (e.g. giving away salty treats to increase drink purchases).

Cost centres: Usually produce goods or provide services to other parts of the company. Because they only make goods or services, they have no control over sales prices and therefore they can be evaluated only based on their total costs.

One way for a cost centre to reduce costs is by buying inferior materials, but doing so hurts the quality of finished goods. When dealing with cost centres, you must carefully monitor the quality of goods.

Profit centres: They are businesses within a larger business, such as the individual stores that make up a mall, whose managers enjoy control over their own revenues and expenses. They often select the merchandise to buy and sell, and they have the power to set their own prices.

Profit centers are evaluated based on the controllable margin: the difference between controllable revenues and controllable costs. All non-controllable costs, such as allocated overhead or other indirect fixed costs are excluded from the evaluation. The great thing about running a profit center is that doing so gives managers an incentive to do exactly what the company wants → earn profits.

However, classifying responsibility centres as profit centres has disadvantages too. Although they get evaluated based on revenues and expenses, no one pays attention to the use of their assets. This gives managers an incentive to use excessive assets to boost profits.

Investment centres: Feature everything. Managers of investment centres have authority over and are held responsible for revenues, expenses and investments made in their centres. Return on investment (ROI) is often used to evaluate their performance.

To improve the return on investment, managers can either increase the controllable margin (profits) or decrease average operating assets (improve productivity).

Using return on investment to evaluate investment centres addresses many of the drawbacks involved in evaluating revenue centres, costs centres, and profit centres. However, classification as an investment centre can encourage managers to emphasise productivity over profitability – work harder to reduce assets (which increases ROI) rather than to increase overall profitability.

Alternative answer

Cost centre

- *Cost centre manager is responsible for and has control over controllable costs incurred in the cost centre.*
- *Uncontrollable costs such as H/O allocated cost depreciation interest etc. do not come under controllable costs. Hence the cost centre manager is not responsible for these.*
- *Examples of a cost centre – maintenance dept., manufacturing dept.*
- *Manager of a cost centre is not responsible for revenue, assets and liabilities.*
- *Performance can be measured through budgets, efficiency measures and variance analysis.*

Revenue centre

- *Manager is responsible only for raising revenue and has no responsibility for forecasting or controlling costs.
E.g. Sales centre of a branded product.
Fund raising centre of a charity.*
- *Performance can be controlled through revenue targets*

Profit centre

- *Accountable for both costs and revenue. To establish a profit centre it is required to identify units of the organisation to which both revenue and costs can be separately attributed*
- *Revenue may arise from both external and internal sales at a transfer price*
- *Controllable profit can be used for performance evaluation*

Investment centre

- *This is a profit centre with the additional responsibility of capital investment. Accordingly, it is accountable for controllable profit and controllable capital employed*
- *Assessment of the results of a SBU as profit alone is inadequate and it has to be related to capital invested (ROCE, ROI, residual income etc.)*
- *Subsidiary of a conglomerate is an investment centre.*
- *Manager has the authority to decide price, volume of sales, volume of product costs incurred, capital assets to be purchased, and the working capital requirement.*
- *In evaluating performance, the head office non-current assets apportioned to the centre are to be reported separately since they are not directly attributable to the investment centre.*

(b) Controllability principle

The controllability principle states that it is appropriate to evaluate the performance of a responsibility centre only based on measurable targets significantly influenced by the manager of that responsibility centre.

The controllability principle can be implemented by either eliminating the uncontrollable items from the areas that the managers are held accountable for or by calculating their effects so that the reports distinguish between controllable and uncontrollable items.

(Total: 10 marks)

Answer 05

Relevant Learning Outcome/s:
5.1.6 Assess receivable management decisions such as cash discounts, age analysis, change in credit policy including whether to factor or not.
Study text reference: Page 635

(a) CURRENT SITUATION	Rs.'000	Rs.'000
Total present sales	360,000	
Present credit sales (80%*360,000)	288,000	
Debtors outstanding at any time (288,000/360*75 days)	60,000	
Interest cost on debtors (60,000*15%)		(9,000)
Bad debts (288,000*2%)		(5,760)
Total cost in the current system		(14,760)
<u>PROPOSED 4% SETTLEMENT DISCOUNT SCHEME</u>		
<u>Impact from the existing sales</u>		
Current credit sales (as above)	288,000	
30 days credit = (75%*288,000/360*30 days*15%)		(2,700)
75 days credit = (25%*288,000/360*75 days*15%)		(2,250)
Discount expenditure (4%*288,000*75%)		(8,640)
Bad debts (288,000*25%*2%)		(1,440)
Increase in administration cost		(500)
Total cost from current sales		(15,530)
<u>Impact from new sales from discount scheme</u>		
Increase in 30 days credit sales (288,000*20%)	57,600	
Discount on increased sales (4%*57,600)		(2,304)
Interest in debtors (57,600/360*30*15%)		(720)
Additional contribution (57,600*25%)		14,400
Gain from new sales		11,376
Net impact if the discount is introduced (11,376 - 15,530)		(4,154)
Net gain from introducing the discount scheme (14,760 - 4,154)		10,606

Since there is a gain of Rs. 10.6 million from introducing the discount scheme it is financially desirable for the company.

(b)	Average credit period prior to the change	75 days
	Credit sales after the change	345,600
	Debtors outstanding at any given time	37,800
	$(4,800 + 18,000 + 15,000)$	
	Average credit period after the change	39 days
	Decrease in debtors period	36 days

Since there is a reduction in the debtors' period there is a 36-day improvement in the cash operating cycle.

(Total: 10 marks)

Alternative answer

(a) Cost-benefit analysis

Benefits

Additional contribution	W1	14,400
Savings in finance cost	W2	3,330
Savings in bad debts	W3	4,320
		<u>22,050</u>

Costs

Cost of discounts	W4	10,944
Increase in administrative costs		500
		<u>11,444</u>
Net benefit		<u><u>10,606</u></u>

The proposed early settlement discount scheme is financially desirable.

W1

Additional contribution

Existing credit sales $(360,000 * 80\%)$	288,000
Additional sales $(288,000 * 20\%)$	57,600
Additional contribution $(57,600 * 25\%)$	14,400

W2

Savings in finance costs

Trade receivables

Before early settlement discount scheme

$(288,000 * 75/360)$ 60,000

After early settlement discount scheme

75% of the existing credit sales $(288,000 * 75\%)$ 216,000

100% of new credit sales 57,600

(As above) **273,600**

Trade receivables on that $(273,600 * 30/360)$ 22,800

Trade receivables on remaining 25% of the existing credit sales $(288,000 * 25 * 75/360)$ 15,000

37,800

Decrease in trade receivables $(60,000 - 37,800)$ 22,200

Finance cost savings $(22,200 * 15\%)$ **3,330**

W3

Savings in bad debts

Bad debts before early settlement discount scheme

$(288,000 * 2\%)$ 5,760

Bad debts after early settlement discount scheme

$(288,000 * 25\% * 2\%)$ 1,440

Benefit 4,320

W4

Cost of discounts

Revenue subject to early settlement discount scheme

273,600

$((288,000 * 75\%) + 57,600)$

Discount @ 4% $(273,600 * 4\%)$ **10,944**

(b)

Trade receivable collection period before early settlement discount scheme

75 days

$(360 / (\text{Credit sales} / \text{Trade receivables}))$

$(360 / (288,000 / 60,000))$

Trade receivable collection period after early settlement discount scheme

39 days

$(360 / ((288,000 + 57,600) / 37,800))$

Reduction in trade receivable collection period 36 days

Therefore reduction in cash operating cycle 36 days

Answer 06

Relevant Learning Outcome/s:	
2.1.4	Assess information generated through mix and yield variances and planning, and operating variances.
2.1.5	Demonstrate the impact of the learning/experience curve on planning and controlling.
2.2.3	Analyse the budgetary control statement (original budget, flex budget, actual and variances).
2.2.4	Discuss feedback and feed-forward controls, and their behavioral implications
Study text reference: Pages 162, 195, 216-218, 220, 222	

(a) **Revised labour and variable overheads budget for the fourth month**

	Revised Budget	Rs. '000s
Direct labour (W1) (1,258*1,000)		1,258.00
Variable overheads (1,258 * 750)		943.50

W1: Revised labour time

$$Y = aX^b$$

$$a = 2 \text{ hours}$$

$$X = 10,000$$

$$b = -0.152$$

Average time for the first 9,000 units = $2 \times 9,000^{-0.152} =$	0.501170078	hours
Average time for the first 10,000 units = $2 \times 10,000^{-0.152} =$	0.493207867	hours
Average time for the first 9,999 units = $2 \times 9,999^{-0.152} =$	0.493215364	hours
Total time for 9,000 units (using the calculator) =	4,510.530706	hours
Total time for 9,999 units (using the calculator) =	4,931.660431	hours
Total time for 10,000 units (using the calculator) =	4,932.078674	hours
10,000 th unit's time =	0.41824348	hours
Total time from 9,001 – 10,000 units (4932.078674) – (4510.530706)	421.54797	hours
Total time from 10,001 to 12,000 units (0.418 * 2,000)	836.48696	hours
Total for 3,000 units	1,258.03493	hours

(b) **Budgetary control statement**

	Revised budget	Flexed budget	Actual results	Variance Rs. '000
Sales quantity	3,000	2,500	2,500	
Sales	39,000.00	32,500.00	32,250.00	(250.00)
Direct materials	15,000.00	12,500.00	12,750.00	(250.00)
Direct labour (W2)	1,258.00	1,048.90	1,750.00	(701.10)
Variable overheads (W2)	943.50	786.68	1,200.00	(413.32)
Fixed overheads	9,000.00	9,000.00	8,600.00	400.00
Total cost	26,201.50	23,335.58	24,300.00	(964.42)
Profit	12,798.50	9,164.42	7,950.00	(1,214.42)

W2: Computation of labour time and cost

Total time for 9,001 – 10,000 units	421.54797	hours
Total time for 10,001 to 11,500 units	627.36522	hours
Total for 2,500 units	1,048.91319	hours
Direct labour cost for 2,500 units (1048.91319 * 1,000) approx..	Rs. 1,048,900	
VOH cost for 2,500 units (1048.91319 * 750) approx.	Rs. 786,675	

(c)

Planning variance

Original budgeted hours for 2,500 units (2 * 2,500)	5,000.00	
Revised budget for 2,500 units (W2)	1,048.90	
Variance	3,951.10(F)	
Labour efficiency planning variance (3,951.10* 1,000)		3,951,100 (F)
Variable overheads efficiency planning variance (3,951.10 * Rs. 750)		2,963,325(F)

Operating variance

$$\begin{aligned}\text{Labour efficiency operating variance} &= (0.5 * 2,500 - 1,048.90) * 1,000 \\ &= 201,100 \text{ Ad}\end{aligned}$$

$$\begin{aligned}\text{Variable overheads efficiency operating variance} &= (0.5 * 2,500 - 1,048.90) * 750 \\ &= 150,825 \text{ Ad}\end{aligned}$$

- (d) Feedback control compares actual results with those budgeted. Like what is done by WPL, the actual results are compared with the budgeted, and both negative and positive variances are identified. Where there is a material difference between the actual and expected positions, the variance is investigated and corrective measures are taken.

By doing so WPL tries to get the actual results in line with those budgeted. Therefore the feedback control is reactionary and based on historical data.

Feed-forward control is the forecasting of differences between actual and planned outcomes, and the implementation of action, before the event, to avoid such differences.

Feedback is backward looking and correcting the activities that sometimes will not be appropriate to the current and future conditions.

Feed-forward control uses the latest forecast of results to compare to an expected position in the future. In feed-forward control, costs are constantly controlled and monitored.

This expectation is usually generated by using the information that was not available at the time the original plan was set.

This differs from feedback control because the latest forecast is an estimation of the future results and its aim is to proactively anticipate any issues.

(Total: 25 marks)

Answer 07

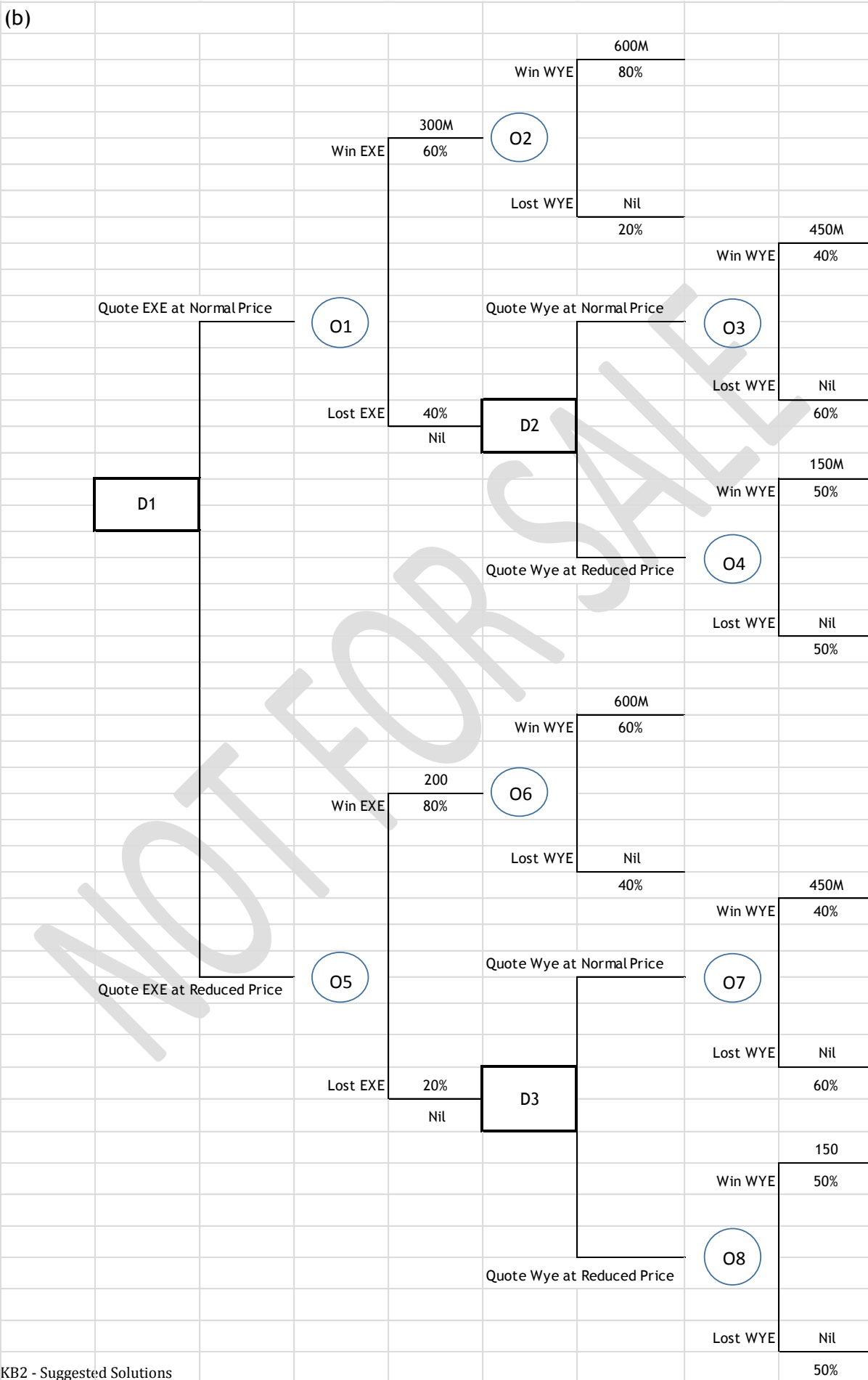
Relevant Learning Outcome/s:

3.8.2 Demonstrate how a decision would be made under conditions of uncertainty, using: <ul style="list-style-type: none">- Decision tree-based expected value calculations- Data tables- Alternative decision criteria (minimax, maximax and minimax regret)
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Study text reference: Page 533

- (a)
- (i) Probability of winning WYE having won EXE at normal price = $48\%/60\% = 80\%$
 - (ii) Probability of losing WYE having won EXE at normal price = $1 - 80\% = 20\%$
 - (iii) Probability of winning WYE having won EXE at reduced price = $48\%/80\% = 60\%$
 - (iv) Probability of losing WYE having won EXE at reduced price = $1 - 60\% = 40\%$

(b)



(c)

Please note that the answer should be in line with the candidate's decision tree.

$$EV(O2) = 600 \times 80\% + 0 \times 20\% = 480$$

$$EV(O3) = 450 \times 40\% + 0 \times 60\% = 180$$

$$EV(O4) = 150 \times 50\% + 0 \times 50\% = 75$$

$$\text{At D2 quote for WYE at normal price, EV} = 180$$

$$EV(O1) = (480 + 300) \times 60\% + (180 + 0) \times 40\% = 540$$

$$\text{At D1, EV of quoting for EXE at normal price} = 540$$

$$EV(O6) = 600 \times 60\% + 0 \times 40\% = 360$$

$$EV(O7) = EV(O3) = 180$$

$$EV(O8) = EV(O4) = 75$$

$$\text{At D3 quote for WYE at normal price, EV} = 180$$

$$EV(O5) = (360 + 200) \times 80\% + (180 + 0) \times 20\% = 484$$

$$\text{At D1, EV of quoting for EXE at reduced price} = 484$$

At D1, quote for EXE at normal price

The best course of action for MDB is to quote for EXE at the normal price and quote for WYE also at the normal price, irrespective of winning or losing EXE.

(Total: 25 marks)



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2. to assist students with their research into the subject and to further their understanding and appreciation of the subject.

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