
Answers

Section A

- 1 A $(\$2,000 \times 120 \div 160) = \$1,500 = A$
- 2 B $(5,000 + 23 \times 4,000 - 1,500) = 95,500 = B$
- 3 D $((\$10,000 \div (20,000 - 18,000)) + \$4) \times (20,000 - 18,000) = \$18,000 \text{ fav} = D$
- 4 A $(\$253,000 - \$85,000 - \$8,000) \div (60,000 - 20,000) = \$4.00 = A$
- 5 D $(\$15 + 100/70) = \$21.43 = D$
- 6 D
- 7 A
- 8 B
- 9 A $25,000 \div 10 \div 2,300 \times 100\% = 109\% \text{ \& } 2,300 \div 2,400 \times 100\% = 96\% = A$
- 10 B

Section B

1 (a) Estimated unit cost of the proposed new product under marginal costing

		\$ per unit
Direct material	4 kg per unit at \$5.00 per kg	20.00
Direct labour	0.5 hour per unit at \$10.00 per hour	5.00
Direct other expenses		2.00
Marginal cost per unit		<u>27.00</u>

(b) (i) Overhead absorption rate

= Budgeted fixed overhead ÷ budgeted direct labour activity
 \$60,000 ÷ 6,000 direct labour hours = \$10 per direct labour hour

(ii) Estimated unit cost of the proposed new product under traditional absorption costing

		\$ per unit
Direct material	4 kg per unit at \$5.00 per kg	20.00
Direct labour	0.5 hour per unit at \$10.00 per hour	5.00
Direct other expenses		2.00
Variable cost per unit		<u>27.00</u>
Absorbed fixed overhead	0.5 hour per unit at \$10.00 per hour	5.00
Traditional absorption cost per unit		<u>32.00</u>

(c) (i) Activity based costing (ABC) driver rates

Drilling = \$10,000 ÷ 20,000 drilling operation = \$0.50 per drilling operation
 Pressing = \$6,000 ÷ 24,000 pressing operations = \$0.25 per pressing operation

(ii) Estimated unit cost of the proposed new product under activity based costing

		\$ per unit
Direct material	4 kg per unit at \$5.00 per kg	20.00
Direct labour	0.5 hour per unit at \$10.00 per hour	5.00
Direct other expenses		2.00
Variable cost per unit		<u>27.00</u>
Overheads		
Drilling cost	2 drilling operations at \$0.50 each	1.00
Pressing	6 pressing operations at \$0.25 each	1.50
Activity based cost per unit		<u>29.50</u>

(d) Target costing

The traditional (cost plus) approach to product pricing is to begin by calculating product cost and then to add on a required profit margin to calculate a sales price.

Under target costing product cost is derived by subtracting a desired profit margin from a competitive market price. The market price chosen should be one that will give the organisation its desired market share. The desired profit margin will depend upon the investment required to make the product and the rate of return the firm requires on that investment.

The resultant cost figure tells the organisation what the product should cost. If this cost is lower than actual cost the organisation should then attempt to achieve target cost by changes in design and improvements in efficiency. The target cost may not be achieved immediately but may be considered as a target to work towards over a period of time.

Value analysis

This involves the examination of factors affecting the cost of a product or service with the objective of achieving specified purpose as economically as possible whilst maintaining standards of quality and reliability. Its development resulted from a realisation that some products incorporated features that customers did not require or were unwilling to pay for. Value analysis involves establishing the precise requirements of customers and reviewing alternative ways of achieving these requirements. This normally involves considering alternative materials and production methods. In this review it is important to distinguish utility value (value that stems from the use to which a product may be put) and esteem value (value that stems from beauty or craftsmanship).

Value analysis should result in reduced cost by the elimination of unwanted product features, unnecessarily expensive materials and overcomplicated production methods.

2 (a) Operational causes of variances

Adverse sales volume variance

This is caused by actual sales units being less than budgeted. This could be as a result of increases in selling price (as evidenced by a favourable sales price variance), or reduced quality (as possibly suggested by the favourable ingredients price variance). Other explanations include increased competition, changes in taste, a reduction in the amount of air passengers etc.

Favourable sales price variance

This is caused by actual selling price being higher than standard. This could result in a reduction in demand, as evidenced by the adverse sales volume variance. It would usually be caused by a management decision to increase prices, possibly in anticipation of cost increases. It could also represent an attempt to benefit from anticipated excess demand.

Favourable ingredients price variance

This is caused by actual ingredients price being less than standard. This could be due to buying lower quality ingredients (as possibly indicated by the adverse ingredients usage variance, the adverse labour efficiency variance and the adverse sales volume variance). Alternative explanations include surpluses of ingredients or general price inflation being less than anticipated.

Adverse ingredients usage variance

This is caused by using more ingredients per meal unit than standard. This could be as a result of using poor quality ingredients resulting in wastage (see comments above) or could be due to careless usage of ingredients causing excess waste.

Adverse direct labour rate variance

This is caused by paying more per hour for labour than standard. Potential causes include using higher paid skilled labour to perform unskilled tasks, skill shortages leading to wage increases or general inflationary pressures on wages.

Adverse direct labour efficiency variance

This is caused by using more labour hours to produce and serve meals than standard. This could be due to poor quality ingredients resulting in more time to produce meals (see favourable raw ingredients price variance above), or high labour turnover resulting in inexperienced staff.

Favourable fixed overhead expenditure variance

This is caused by actual fixed overhead being less than budgeted. It could be caused by price decreases, or a different pattern of overhead expenditure.

Adverse fixed overhead capacity variance

This is caused by actual labour hours being less than budgeted leading to an under absorption of overhead. This could be as a result of reduced sales and production leading to less hours being worked (as evidenced in the adverse sales volume variance).

Adverse fixed overhead efficiency variance

This is caused by the standard hours for actual production being less than actual hours worked. If overheads are absorbed on the basis of labour hours this is caused by adverse labour efficiency (as evidenced by the adverse labour efficiency variance).

(b) (i) Sales volume profit variance

Actual sales units at standard profit	5,200 meals x \$3 per meal =	\$15,600
		> \$600 Fav
Budgeted sales units at standard profit	5,000 meals x \$3 per meal =	\$15,000

(ii) Sales price variance

Actual sales at actual price		\$98,800
		> \$5,200 Adv
Actual sales at standard price	5,200 meals x \$20 per meal	\$104,000

(iii) Fixed overhead expenditure variance

Budgeted fixed overhead	5,000 meals x \$4 per meal	\$20,000
		> \$1000 Fav
Actual fixed overhead		\$19,000

(iv) Fixed overhead volume variance

Budgeted fixed overhead		\$20,000
		> \$800 Fav
Standard fixed overhead for actual production	5,200 meals x \$4 per meal	\$20,800

Tutorial Note

Variances are often calculated by a formula and such an approach would be equally acceptable here. For example the sales volume variance could be calculated as follows:

$$(Actual\ sales\ units - budgeted\ sales\ units) \times standard\ profit$$

$$(5,200 - 5,000) \times \$3 = \$600\ Fav$$

3 (a) Budgets

(i) Sales Budget

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Sales (units 000)	1,950	2,275	3,250	2,275
Sales (\$000) (w1)	109,200	127,400	182,000	127,400

Working 1

Quarter 1 sales revenue = \$56 x 1,950,000 units = \$109,200,000

(ii) Production budget

	000 units			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Desired closing inventory (w2)	175	250	175	150
Sales	1,950	2,275	3,250	2,275
Less opening inventory (w3)	150	175	250	175
Production	<u>1,975</u>	<u>2,350</u>	<u>3,175</u>	<u>2,250</u>

Working 2 Desired closing inventory

Quarter 1: 2,275,000 units x 5 days ÷ 13 weeks x 5 days = 175,000 units etc

Working 3 Opening inventory

Quarter 1: 1,950,000 x 5 days ÷ 13 weeks x 5 days

(iii) Purchases budget

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Production 000 units	1,975	2,350	3,175	2,250
Kg per unit	3	3	3	3
Purchases 000 kg	5,925	7,050	9,525	6,750
Price per kg	\$6	\$6	\$6	\$6
Purchases \$000	35,550	42,300	57,150	40,500

(b) Revised budget

6,600,000 kg of material per quarter would allow the production of 2,200,000 units per quarter (6,600,000 kg ÷ 3 kg per unit). This is insufficient to meet sales demand for the year. Treehorn should purchase the maximum amount of material available each quarter and build up inventories of finished goods whenever possible.

(i) Production budget

	000 units			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Opening inventory	150	400	325	0
Production	2,200	2,200	2,200	2,200
Available for sale	2,350	2,600	2,525	2,200
Less Sales	1,950	2,275	2,525	2,200
Closing inventory	400	325	0	0

(ii) Methods of overcoming the problems caused by the restriction in material supply.

Possible ways of overcoming the problem are as follows:

- Seek alternative sources of supply
- Seek substitute materials
- Offer to pay more per kg for a greater level of supply
- Be more efficient in the use of material
- Subcontract the production to companies who have supplies of the material.

4 (a) Performance measures

	South Division	North Division
(i) Return on capital employed (Operating profit ÷ Capital employed x 100) (\$700k ÷ \$3,500k x 100) (\$840k ÷ \$4,000k x 100)	20.0%	21.0%
(ii) Return on sales (Operating profit ÷ Sales x 100) (\$700k ÷ \$50,000k x 100) (\$840k ÷ \$3,200k x 100)	1.4%	26.3%
(iii) Asset turnover (Sales ÷ Capital employed) (\$50,000k ÷ \$3,500k) (\$3,200k ÷ \$4,000k)	14.3	0.8
(iv) Residual income (Operating profit – (capital employed x imputed interest charge)) (\$700k – (\$3,500k x 12%) = (\$840k – (\$4,000k x 12%) =	\$280k	\$360k

(b) Differences in performance

The differences in performance between the two divisions are probably due to the difference in the nature of their businesses.

The South division sells low priced food from rented stores. Low sales prices result in a low margin on sales. In turn low prices are attractive to customers and result in a high level of sales. Add to this the fact that the stores are rented (leading to a low investment in non-current assets) and this results in a very high asset turnover.

The North division sells luxury motor vehicles which are likely to command a premium price, leading to a higher return on sales. The high prices in turn are likely to lead to a low level of sales. North operates an automated production plant, which is likely to require a high level of investment in non-current assets, resulting in a low asset turnover.

(c) Value of non-financial performance measures

Although financial success is important to any organisation, many organisations use a mixture of financial and non-financial performance measures. Non-financial performance measures offer the following advantages:

- Non-financial performance measures are often seen as leading indicators of financial performance. Problems in, for example, customer service will eventually lead to a loss of sales and profit. Monitoring levels of customer satisfaction will give an early warning of bad customer service and allow action to be taken before financial performance is affected.
- Financial performance indicators are commonly very aggregate in nature. A reduction in the return on capital employed ratio tells us little about the reason why it has occurred. The use of non-financial performance measures can help the firm understand why.
- Financial performance measures are often capable of distortion by managers. If a range of non-financial indicators are used bad performance is more difficult to hide.
- Non-financial measures can be changed as a firm's strategy changes. Non-financial measures can be used to monitor the effectiveness of delivery of a chosen competitive strategy.

(only three advantages were required)

		<i>Marks</i>		
1	(a) marginal costing 0.5 mark per variable cost marginal cost per unit	1.5		
		<u>0.5</u>	2	
	(b) (i) Fixed overhead absorption rate			1
		(ii) traditional absorption costing variable cost per unit overhead per unit cost per unit	1	
			1	
			<u>1</u>	3
	(c) (i) cost drivers, one each			2
		(ii) activity based costing variable cost per unit drilling overhead per unit pressing overhead per unit cost per unit	1	
			1	
			1	
			<u>1</u>	4
	(d) Description 2 x 2 marks Use in cost reduction	4		
		<u>4</u>	8	20
	2	(a) 1 mark per general cause, 2 marks if related to the scenario		10
		(b) 2.5 marks per variance		<u>10</u>
			20	
3	(a) (i) 0.5 marks per revenue figure		2	
			6	
	(ii) 0.5 marks per figure		2	
			<u>2</u>	4
	(b) (i) Production Sales Inventories	2		
		2		
		<u>2</u>	6	
	(ii) one mark per sensible suggestion, max	<u>2</u>	2	20
	4	(a) 2 or 3 per ratio as specified		10
		(b) 2 per difference		4
(c) 2 per reason			<u>6</u>	
			20	