



ACCA

Paper F5

Performance Management
December 2017

Mock B – Answers



To gain maximum benefit, do not refer to these answers until you have completed the revision mock questions and submitted them for marking.

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SECTION A

1 D

The market values of products A and B are:

	A	B	Total
Units of output	3,000	9,000	12,000
Price per unit	\$3.00	\$4.00	
Market value	\$9,000	\$ 36,000	\$ 45,000
Percentage of costs	\$9,000 / \$45,000 = 20%	\$9,000 / \$45,000 = 80%	

On that basis, we can split the listed costs as follows:

	A	B
Direct material costs	\$2,400	\$9,600
Direct labour costs	\$1,000	\$4,000
Overheads	\$600	\$2,400
Total	\$4,000	\$16,000

2 B

$$\begin{aligned}
 \text{Return per minute} &= \frac{\text{Selling price} - \text{material cost}}{\text{Time on bottleneck resource}} \\
 &= \frac{50 - 20}{8} \\
 &= \$3.75 \\
 \text{Return per hour} &= \$3.75 \times 60 = \$225
 \end{aligned}$$

3 C

Throughput accounting is not one of the four techniques of Environmental Management Accounting.

4 B

Profit is maximised where Marginal Cost = Marginal Revenue.

Need demand function: $P = a - bQ$; where $b = \frac{\Delta P}{\Delta Q}$; hence $10/-20 = 0.5$

$$P = a - 0.5Q$$

$$200 = a - 0.5 * 1,000$$

$$700 = a$$

$$\text{Therefore, } P = 700 - 0.5Q$$

$$\text{Therefore, } MR = 700 - Q$$

Profit maximisation, $MC = MR$; $140 = 700 - Q$, therefore $Q = 560$ units.

Substitute Q of 560 into $P = 700 - 0.5Q$; $P = 700 - 0.5 * 560$

Hence, $P = \$420$.

5 C

Sales volume contribution variance:

	Units
Budgeted sales	1,000
Actual sales	1,100
	100 F
× Standard contribution per unit	× 60 ^{Note}
	\$6,000 F

Note: Standard contribution per unit = 30% × 200 = \$60.

6 D

Both statements are correct. The greater the level of production overheads, the more ABC will provide information than traditional costing which assumes that overhead costs are driven by volume. One of the strengths of ABC is its ability to separate the different overhead resource inputs into different categories to better reflect a product's use.

7 D

8 B

Current ROI is $(\$40,000/\$150,000) \times 100\% = 26.7\%$

If the investment is accepted, the revised ROI is $(\$42,000/\$160,000) \times 100\% = 26.3\%$, i.e. lower than at present, and the project will be rejected.

Current RI is $\$40,000 - (10\% \times 150,000) = \$25,000$

Revised RI is $\$42,000 - (10\% \times 160,000) = \$26,000$, i.e. higher than at present, and the project will be accepted.



Tutorial note

Note that this is a classic example of the ROI giving the wrong conclusion because a project that was worthwhile (as far as the company was concerned) is rejected, since it reduces the current division's ROI.

9 A

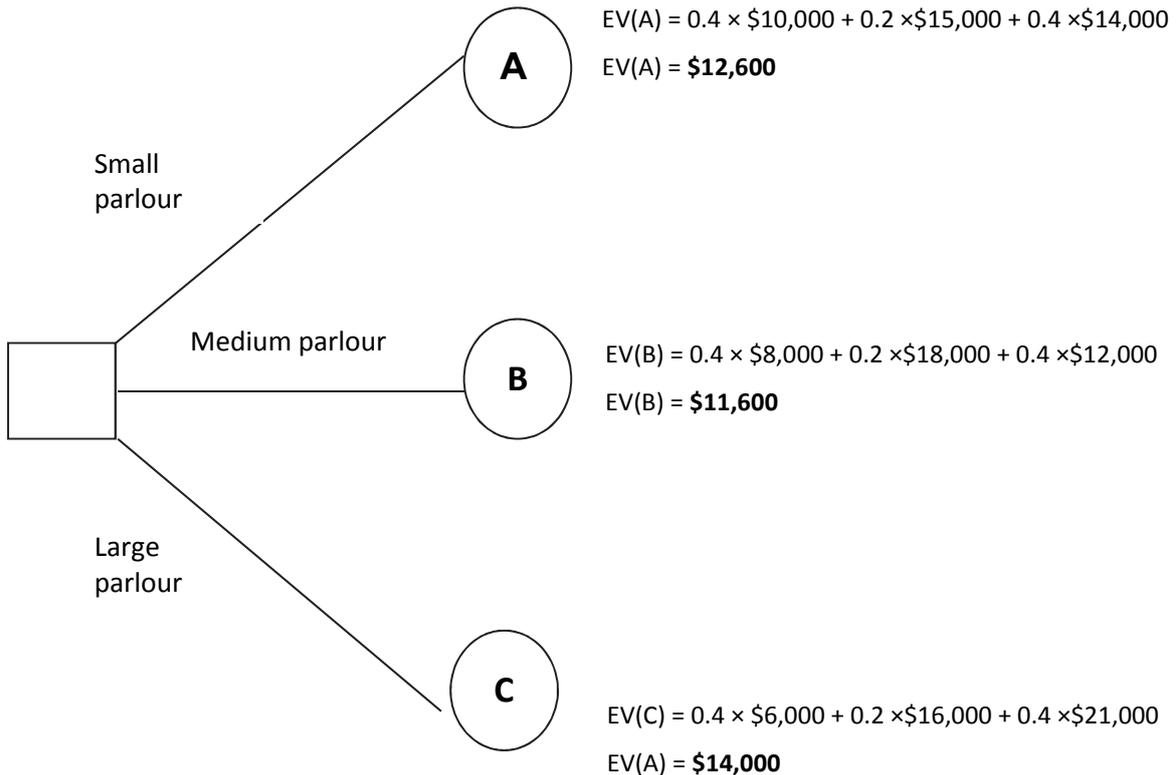
Only statement (1) is true. For services with an important amount of fixed costs, ABC methods of cost control are more suited than target costing. Statement (2) is not correct: recovery of product R&D costs is more a concern of the lifecycle costing technique.

10 C

Both statements are incorrect. Favourable variances may not always be good. For example, a favourable materials variance might be achieved by buying poorer quality material, which means that the labour force have to spend much longer working on the material, leading to an adverse labour variance.

Variance reporting is the reporting of the differences between the actual results and the flexed budget, not the original budget.

11 C



12 D

Neither statement is true. Uncontrollable information can still be reported. Other procedures, such as firewalls and passwords, can be used to ensure the security of highly confidential information.

13 C

Total fixed costs amount to $\$137,500 + \$27,500 = \$165,000$.

C/S ratio = $\$275,000 / \$500,000 = 0.55$

Breakeven sales revenue = fixed costs/C/S ratio
 $= \$165,000 / 0.55$
 $= \$300,000$

14 C

15 C

Class sizes are the result of the number of pupils educated (output), the number of teachers employed (input), and how well the timetable is organised in using those teachers.

SECTION B

16 C

The existing overhead absorption rate is:

$$\frac{\$15,600 + \$19,500 + \$13,650}{(2,000 \times 24/60) + (1,500 \times 40/60) + (800 \times 60/60)} = \frac{\$48,750}{2,600 \text{ hours}}$$

So at present, OAR = \$18.75 per hour. Therefore, we can calculate overheads absorbed by each product as:

Product X: OAR \$18.75 × (24/60) = \$7.50

Unit cost

	Product X
Direct material	\$5.00
Direct labour	\$3.60
Production overhead	\$7.50
	\$16.10

17 D

Cost driver rates

Material receipt and inspection = $\frac{\$15,600}{10 + 5 + 16} = \503.23 per batch.

Process power = $\frac{\$19,500}{(2,000 \times 6) + (1,500 \times 3) + (800 \times 2)} = \1.078 per power drill operation.

Material handling = $\frac{\$13,650}{(2,000 \times 4) + (1,500 \times 6) + (800 \times 3)} = \0.70 per m² handled.

	Product X
Direct material	\$5.00
Direct labour	\$3.60
Production overhead	
Material receipt/inspection (W1)	\$2.52
Process power (W2)	\$6.48
Material handling (W3)	\$2.80
Cost per unit	\$20.40

Workings

(W1) Material receipt/inspection

Product X 503.23/batch × 10 batches/2,000 units = \$2.52/unit

(W2) Process power

Cost/unit

Product X \$1.08/operation × 6 operations = \$6.48

(W3) Material handling

Cost/unit

Product X $\$0.70/\text{m}^2$ of material $\times 4\text{m}^2 = \$2.80$ **18 C**

All statements are correct.

ABC will have the following implications for Anderson:

- Pricing can be based on more realistic cost data. The cost per unit under ABC has increased by 26.7% for product X, whereas the cost per unit has decreased by 15.7% for product Y and 13.1% for product Z. The price of the products will be based on this more realistic cost and therefore pricing will be improved.
- Decision making will be improved. More realistic product costs mean that Anderson can focus on the products which give the highest margin and may decide to stop selling products which give a low or negative margin. Information on sales prices would be required in order to calculate these margins.
- Performance management can be improved. Anderson will focus on the most profitable products and, as a result, performance should be improved. In addition, control should be improved since the more realistic costs will form the basis of the budget.

**Tutorial note**

Take note, however, that the benefits obtained from ABC may not justify the costs. In some situations ABC does not provide very different information from traditional absorption costing. To practice an important past exam question on the subject, we recommend you tackle Question 5 from the December 2012 exam, 'Wash Co.' as part of your revision process (note however that ABC is no longer tested in Section C questions).

19 C

Statement 1 is not correct. ABC can be applied to all overhead costs, not just production overheads.

20 D

Statement (1) is not correct: ABC provides a more accurate cost per unit. As a result, future pricing, sales strategy, performance management and decision making should be improved.

Statement (2) is not correct either; the benefits obtained from ABC might not justify the costs.

21 C

On the basis of maximising expected values, we have the following expected values of profits:

If Rebecca supplies 10 cases, the expected value of profits is $(0.3 \times \$100) + (0.5 \times \$100) + (0.2 \times \$100) = \100 .

If Rebecca supplies 20 cases, the expected value of profits is $(0.3 \times \$10) + (0.5 \times \$200) + (0.2 \times \$200) = \143 .

If Rebecca supplies 30 cases, the expected value of profits is $(0.3 \times (\$80)) + (0.5 \times \$110) + (0.2 \times \$300) = \91 .

Therefore, Rebecca will choose the level of supply that maximises profits using expected values, and that is a supply of 20 cases.

22 A

The maximin rule involves selecting the alternative that maximises the minimum pay-off achievable. Rebecca would look at the worst possible outcome at each supply level, then select the highest one of these.

If Rebecca supplies 10 cases, the worst possible outcome is a profit of \$100.

If Rebecca supplies 20 cases, the worst possible outcome is a profit of \$10.

If Rebecca supplies 30 cases, the worst possible outcome is a loss of \$(80).

Rebecca would therefore opt for 10 cases when using the maximin criteria.

23 D

The maximax rule involves selecting the alternative that maximises the maximum pay-off achievable. Rebecca would look at the best possible outcome at each supply level, then select the highest one of these.

If Rebecca supplies 10 cases, the best possible outcome is a profit of \$100.

If Rebecca supplies 20 cases, the best possible outcome is a profit of \$200.

If Rebecca supplies 30 cases, the best possible outcome is a profit of \$300.

Rebecca would therefore opt for 30 cases when using the maximax criteria.

24 C

The minimax regret strategy is the one that minimises the maximum regret. Regrets can be tabulated as follows:

	<i>Supply of cases</i>		
	<i>10 cases</i>	<i>20 cases</i>	<i>30 cases</i>
Daily demand			
10 cases	\$0	\$90	\$180
20 cases	\$100	\$0	\$90
30 cases	\$200	\$100	\$0
Maximum regret	\$200	\$100	\$180

Rebecca should order 20 cases a day.



Tutorial note

You must remember how to calculate the values in a regret table. For example, in the first row of 10 cases: choosing to supply 10 cases will incur no 'regret' from the decision maker, who has made the best decision and will 'lose' \$0.

If, however, the decision maker chooses to supply 20 cases when the daily demand is only of 10 cases, the resulting profit will be of \$10, as per the question. This profit of \$10 occurs when a better decision (to supply 10 cases) would have incurred a profit of \$100: that is a 'regret' of \$90.

If the decision maker chooses to supply 30 cases when the daily demand is only of 10 cases, the resulting loss will be \$80, as per the question. This loss of \$80 occurs when a better decision (to supply 10 cases) would have incurred a profit of \$100: that is a 'regret' of \$180.

25 C

All statements are correct.

26 D

Statement (1) is not correct. Cost is a factor that should be considered when deciding whether a variance should be investigated. For an investigation to be worthwhile, the cost of the investigation must be less than the benefits of correcting the cost of the variance.

Statement (2) is not correct: a business may decide to only investigate variances above a certain amount.

Statement (3) is correct: Implementing a Just in Time system will affect the labour efficiency variance. The consequences of poor efficiency are magnified in a JIT system.

Statement (4) is correct: the system for measuring and recording the figures may be unreliable. In that case, the variances will be meaningless, and should not be investigated.

27 C

Learning curve: $Y = 40 \times 200^{-0.1520}$
 $= 17.877$ hours/unit

Therefore: 200 units = $3,575$ hours new standard
 $200 \times 40 = 8,000$ hours old standard

Hence $4,425$ hours = planning variance, which at $\$5$ per hour = $\$22,125$ F

28 A

First, we calculate the time taken to produce 400 units.

$$Y_{400} = 40 \text{ hours} \times 400^{-0.1520}$$

$Y_{400} = 16.0897$ hours on average, or, for all 400 units, $6,435.87$ hours in total.

Then, we calculate the time taken to produce 399 units.

$$Y_{399} = 40 \text{ hours} \times 399^{-0.1520}$$

$Y_{399} = 16.0958$ hours on average, or, for all 399 units, $6,422.22$ hours in total.

Therefore, to make the 400 th unit would have taken $6,435.87 - 6,422.22 = 13.65$ minutes.

To make the next 250 units, we would need 250×13.65 minutes = $3,412.50$ hours in total.

29 C

Expected idle time: $5,250 \times 0.2 = 1,050$

Actual idle time $5,250 - 4,500 = 750$.

Hence variance is 300 hours favourable at $\$5.00$ hour = $\$1,500$.

30 A

Statements (2) and (4) are not correct: Planning variances will result in managers changing the assumptions in future budgets, and significant planning variances do need to be investigated

SECTION C

31 PAINT MIXERS

- (a) The purchasing manager was responsible for a series of significant adverse material price variances in the first three months of the year which averaged approx 10% of the standard monthly spend.

The adverse variances have steadily declined over the three months (from \$3,000 to \$1,000) and if this level of progress is maintained a favourable variance will arise in April. We do not know whether the adverse variances were the result of poor purchasing decisions or the inevitable result of, say, increased commodity prices.

The steadily improving trend suggests that the purchasing manager is in control of the situation and that he may have inherited a purchasing environment of rising prices that were not fully reflected in the cost standards. The comments of the Sales Director suggest that the purchasing manager has not sacrificed quality in order to achieve this improving position mix of materials used and the yield achieved. His performance in the first month was exceptionally poor – the adverse mix and yield variances of \$6,000 equalled approximately 30% of the standard monthly spend.

The production manager controls both the mix and the production process and must bear responsibility for this initial very poor performance. That said, in month three, the production manager has achieved modest favourable mix and yield variances (\$100 and \$50), maintaining the improving trend that started in month two. His very poor initial performance may, in part, have been the result of an inadequate induction process or could have reflected a conscious attempt to improve the quality of the output by increasing the quality of the mix.

It may also be possible that certain customers requested a different shade of green requiring a change in the mix of blue and yellow paint. Whatever the background, the very poor yield performance in January suggests that his changes to the mix had very unfortunate consequences in terms of productivity.

Quality

The managing director will have been concerned in January and February that the increasing sales and customer satisfaction levels reported by the sales director may have been bought at a high price.

The comment of the sales director however that sales continue to rise suggests that the new production manager – after some initial costly experimentation - has managed to identify a new mix that is both cost efficient and very appealing to customers.

Overall

There was cause for concern in January and February over the performance of both new appointments. The performance of the purchasing manager still continues to be of concern but is on an improving trend, which, if maintained, should ensure that costs are brought fully under control. The production manager, after a very worrying start, appears now to be delivering green paint using a recipe that is both economical and popular with customers.

(b) Materials Price variance

	<i>Standard</i>	<i>Actual</i>	<i>Difference</i>	<i>Actual quantity</i>	<i>Variance</i>
Blue paint	\$2.50	\$2.60	-0.1	1,000	100 (A)
Yellow paint	\$3.00	\$3.10	-0.1	4,000	400 (A)
Bonding agent	\$10.00	\$9.90	0.1	500	50 (F)
					\$450 (A)

Materials Mix Variance

Standard mix: Blue paint 5,500 litres × 0.2 = 1,100 litres

Yellow paint 5,500 litres × 0.7 = 3,850 litres

Bonding agent 5,500 litres × 0.1 = 550 litres

	<i>Actual mix</i>	<i>Difference</i>	<i>Price per litre</i>	<i>Variance</i>
Blue paint	1,000 litres	100 litres	\$2.50	\$250 (F)
Yellow paint	4,000 litres	150 litres	\$3.00	\$450 (A)
Bonding agent	500 litres	50 litres	\$10.00	\$500 (F)
	5,500			\$300 (F)

Materials Yield variance

5,500 litres × 90% = 4,950 litres

5,000 – 4,950 litres = 50 litres × \$4 per litre = \$200 (F)

Marking scheme		<i>Marks</i>
(a)	Every valid comment re performance of purchasing manager worth 1 mark, maximum 6 marks.	6
	Every valid comment re performance of production manager worth 1 mark, maximum 5 marks.	5
(b)	2 mark for correct price variance	2
	4 marks materials mix variance	4
	3 marks material yield variance	3
		—
Total		20
		—

32 SUCCESS SERVICES COMPANY**(a) Financial analysis****Turnover**

This is up substantially, an increase over the previous year of 44%. The new MD has clearly had a significant impact. How has this been achieved?

Profit

This is also up, by 16%. However, net profits have grown at a much slower rate than sales and this is reflected in the sharply reduced net profit margin of 20.1%, compared with 25% in the previous year. It appears that the increased turnover may have been “bought” via price reductions and lower margins or a combination of lower prices and increased costs – perhaps increased expenditure on marketing and advertising.

Gearing and credit management

Interest cover was 5X but has fallen to just 3X. If the company has borrowed at a variable rate it is now substantially more vulnerable to interest rate rises. Average receivables days are up by 12 days – indicating reduced efficiency in chasing up outstanding debts and/or the granting of more generous payment terms to encourage prospective customers.

Overall, significant growth is being achieved – but at the expense of margins, interest cover and extended credit. This is a potentially worrying trend.

(b) Customer perspective**Customer numbers**

The number of customers has increased by nearly 50%. This is a dramatic increase and suggests that there has been a major promotional drive to recruit new customers. The cost of such promotion may account for part of the reduction in the net profit margin. This recruitment drive may have included some form of new customer incentives such as reduced prices for a limited period and may also have included a relaxation of payment terms

% of sales from new software products

This metric also reflects a substantial increase, from 15% to 24%, and implies that substantially increased resource has been devoted to new product development. This focus on new development may well have increased costs but has the potential to lay the foundations for a sustainable increase in sales.

% ontime installation of new products

This metric shows a sharp and worrying fall in the proportion of products that are delivered on time, implying that the increased effort and cost expended on promotion and developing new software products may be being compromised by a failure to meet promised delivery dates.

Average value of software sales

The average value of software sales has fallen by over 20%. The mix of sales may have changed or, perhaps more likely in view of the reduced margin data, there may have been price reductions to increase sales volume.

% customers who complained

This metric, showing a tripling in the rate of complaints, suggests that there has been a major failure to meet customer requirements. This data should prompt an urgent review of both product development procedures and customer relationships with a view to:

- A Identifying what went wrong and the steps needed to prevent a recurrence of the development/installation problems and
- B Establishing the general level of customer satisfaction and seeking to repair any damaged relationships

Internal perspective

The launch of two new products – from a zero base in the previous year – suggests that significant effort has gone into new product launches in the current year.

The two products could have been under development for some time or they could have been initiated and launched within the current year. The launch of these new products – if they were not thoroughly tested to ensure they were bug free – could have been a major contributor to the dramatic increase in the level of customer complaints. If it is found that the new products were a significant contributor to customer complaints the procedures for testing and launch of new products will need to be reviewed.

The tender success rate has increased from 24% to 38%. This could reflect a number of factors such as better understanding of customer requirements which has been successfully translated into product specifications or – much less encouraging - a decision to tender at lower prices or to offer more challenging delivery dates. The latter interpretation appears more likely in the light of the deterioration in service levels suggested by other indicators.

Learning and growth perspective

Programmer output has increased sharply – by some 14%. This has been accompanied however by a worrying 33% increase in the number of bugs per 1,000 lines of code. Has the company been selling products that were released prematurely – hence the customer complaints?

The 8% fall in the number of development staff who have completed a development course and the 15% deterioration in the employee retention rate is also indicative of increased pressure to “get product out of the door”.

This perspective suggests that product quality – and customer satisfaction – is taking second place to a sales drive. Overall, the company appears to have made a major change in direction under its new MD. Priority appears to have been given to short term sales and profit growth at the expense of customers, product quality, staff, margins, interest cover and liquidity. The financial data shows growth but has some worrying features – margins, gearing and liquidity. The balanced scorecard data reveals a dramatic deterioration in service quality and customer and staff satisfaction which suggests that the sales and profit growth is likely to be short lived. Urgent action is required by Michael Speed to ensure that much greater emphasis is given to product quality and customer satisfaction – this may mean longer development times and a reduced rate of sales growth but this is a price that is worth paying.

Marking scheme		<i>Marks</i>
(a)	Valid comments on turnover growth, 1 mark each, maximum 3	3
	Valid comments on profit growth and cost management, 1 mark each, maximum 2	3
	Valid comments on gearing/working capital control, 1 mark each, maximum 2	2
	Conclusion growth at the expense of cost control	2
		—
		10
(b)	Valid comments on customer perspective, 1 mark each, maximum 3	3
	Valid comments on Internal perspective, 1 mark each, maximum 3	3
	Valid comments learning and growth perspective, 1 mark each, maximum 3	3
	Conclusion	1
		—
		10
		—
Total		20
		—