KAPLAN PUBLISHING

ACCA

Paper F5

Performance Management

December 2014

Interim Assessment – Answers

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

SECTION A

1 A

2 C

3 B

4 C

Return per minute = (Selling price – Material cost)/Time on bottleneck resource

= ($100 – $32)/16 minutes

= $4.25 per minute, so return per hour =$4.25 × 60 = $255

5 C

(Bottleneck)

6 D

7 B

8 D

9 A

Breakeven point in $ = Fixed cost/(C/S ratio of the mix), with

C/S ratio of the mix = (0.4*24%) + (0.37*32%) + (0.23*48%)

= 9.6 + 11.84 + 11.04

= 32.48%

Therefore BEP = $475,000/32.48% =$1,462,438

10 B

Break even volume = 7,200 – (7,200*26.2%) = 5,314 units

Contribution at break even point = Fixed costs

Contribution at break even point = 5,314 * 21% × $56

= $62,493

= Fixed costs

11 D

12 A

	X	Y	Z
Contribution ($)	13	13	7
Labour hours	2	1.5	3
Cont/hour	6.5	8.66	2.33
Rank	2nd	1st	3rd

13 'fall'

The shadow price of a scarce resource indicates the amount by which contribution would **fall** if a business were deprived of one unit of the resource.

14 In the demand equation, p = a -bQ, where p = price, Q= quantity demanded and 'a' and 'b' are constants.

b = change in price/change in quantity = +1/–40 = –0.025

a = the price at which demand will be nil

For each increase of $1 in price would result in a fall in demand of 40 units.

For demand to be nil, the price needs to rise by $2,500 (An increase of $1 for every multiple of 40 units from its current price of zero at maximum demand: 100,000/40 *$1 = $2,500))

a = $2,500

Demand equation p = 2,500 – 0.025Q

When Q= 42,000 units, p = 2,500 – (0.025 × 42,000) = $1,450 per unit

15 B

The best approach is to calculate the profit for a range of outputs from 10 units upwards, then select the output with the highest profit.

Units	*Total variable costs*	*Selling price per unit*	*Total select revenue*	*Total contribution*
10	$40,000	$6,500	$65,000	$25,000
11	**$44,400**	**$6,350**	**$69,850**	**$25,540**
12	$49,200	$6,200	$74,400	$25,200
13	$54,400	$6,050	$78,650	$24,250

16 C

17 B

18 A

'greater than'

19 C

20 C

The existing contribution can be calculated as ($50 – $21) × 90,000 units = $2,610,000.

Contribution is higher than this in the three lower branches at the far end of the tree, on the right: $2,700,000, $3,000,000 and $3,240,000.

The joint probability of a contribution of $2,700,000 is 0.45 × 0.60 = **0.27**

The joint probability of a contribution of $3,000,000 is 0.55 × 0.40 = **0.22**

The joint probability of a contribution of $3,240,000 is 0.55 × 0.60 = **0.33**

Therefore, the probability of profit being higher than the existing profit of $2,610,000 is

0.27 + 0.22 + 0.33 = 0.82.

SECTION B

1 LINEACRE CO

(a) Activity-based overhead absorption rates (OARs) are found by dividing the expected cost in each cost pool by the number of cost driver transactions expected during the coming year.

Cost pool	*Cost* ($)	*Number of drivers*	*ABC OAR* ($)
Production set-ups	105,000	300 set-ups	350.00 per set-up
Product testing	300,000	1,500 tests	200.00 per test
Component supply/storage	25,000	500 component orders	50.00 per order
Customer orders/ delivery	112,500	1,000 customer orders	112.50 per order

(b) Production of product ZT3 = (100 × 60) + (60 × 50) = 9,000 units per year

Number of production runs = number of set-ups = 9,000/900 = 10 set-ups

Number of product tests = 10 × 4 = 40 tests

Number of component orders = number of production runs = 10 orders

Number of customer orders = 100 + 60 = 160 orders

General overheads absorption rate = 900,000/300,000 = $3.00 per direct labour hour

Annual direct labour hours for Product ZT3 = 9,000 × 10/60 = 1,500 hours

Activity	*ABC OAR*	*Number of drivers*	*Annual cost* ($)
Setting up	$350.00 per set-up	10 set-ups	3,500
Product testing	$200.00 per test	40 tests	8,000
Component supply	$50.00 per order	10 orders	500
Customer supply	$112.50 per order	160 orders	18,000
			30,000
General overheads = 1,500 × $3.00 per hour =			4,500
Total annual overhead cost			34,500

Total unit cost	$
Components	1.00
Direct labour = 7.80 × 10/60 =	1.30
Overheads = 34,500/9,000 =	3.83
	6.13
Profit mark up	2.45
Selling price	8.58

Marking scheme		
		Marks
(a)	1 mark for each OAR	4.0
(b)	½ mark for each of the five annual overhead costs	2.5
	½ mark each for component cost per unit, labour cost per unit, overhead cost per unit and total cost per unit	2.0
	Calculation of selling price	1.5
		6
Total		**20**

2 PHARAOH

(a)

	Sales volume	*Selling price*	*Sales revenue*	*Contribution per unit*	*Contribution*	*C/S ratio*
		$	$000		$000	
Sphinx	460,000	3.00	1,380	1.80	828	0.60
Pyramid	1,000,000	2.45	2,450	0.78	780	0.32
Mummy	380,000	4.00	1,520	1.40	532	0.35
			5,350		2,140	

Contribution is 40% of sales $(2,140,000/5,350,000)

The breakeven sales *revenue* is:

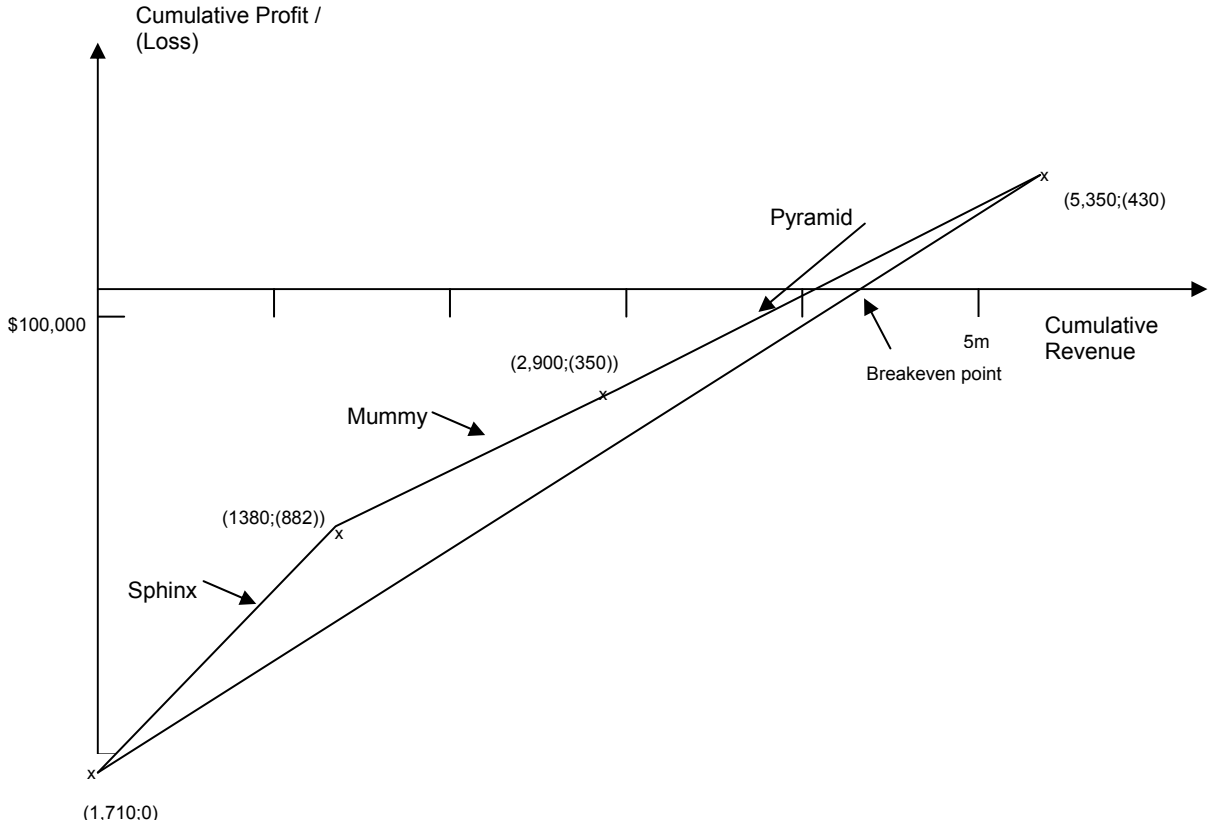
$$\frac{\text{Fixed costs}}{\text{Contribution/sales ratio}} = \frac{£1,710,000}{40\%}$$

= $4,275,000

(b) The products must be ranked according to their C/S ratios:

Product	*Revenue*	*Cumulative revenue*	*Contribution*	*Cumulative profit/loss*
	($000)	($000)	($000)	($000)
		0		(1,710)
Sphinx	1,380	1,380	828	(882)
Mummy	1,520	2,900	532	(350)
Pyramid	2,450	5,350	780	430

The P/V chart plots Cumulative Revenue against the Cumulative Profit column.



ACCA marking scheme		
		Marks
(a)	Weighted average C/S ratio	2
	Correct answer	1
(b)	Workings	2
	Correct chart	4
	Presentation of chart (title, labelling axes, etc)	1
Total		**10**

3 MOC

(a) A price-discrimination strategy is where a company sells the same products at different prices in different markets.

(b) 1 The equation of a straight line is: $y = a + bx$

where y = price (P)

a = intersection of the line with the y-axis

b = gradient

x = quantity (Q)

2 Start by calculation the gradient (b):

$$\text{Gradient} = \frac{\text{Change in price } \$55 - \$70}{\text{Change in quantity } 900 - 750} = -0.1$$

3 Using the price of \$55, this gradient can be substituted back into the equation:

$y = a + bx$

$55 = a - (0.1 \times 900)$

$55 = a - 90$

$a = 55 + 90$

$a = 145$

(Alternatively: the price of \$70 could be substituted back into the equation).

4 Therefore the linear relationship is **P = 145 – 0.1Q**

(c) PED $= \dfrac{\%\text{ change in demand}}{\%\text{ change in price}}$

$$= \frac{(-150/900)\times 100}{(15/55)\times 100}$$

$$= \frac{-16.67\%}{27.27\%}$$

$= -0.611$

$=$ **0.611** (sign can be ignored)

The PED is less than 1 and as a result demand is inelastic. Therefore increasing the price from \$55 to \$70 will increase the revenue.

(d) The current pricing strategy may not be able to be applied if competition was to emerge in the market as the business would now have to be more aware of the competitors' prices.

We may be forced to use going rate pricing to match the competitors prices to compete.

However they may choose to adopt a penetration pricing strategy, which means that they will start off with a low price to try and gain some of our market share.

Competing at this price will drive down are profit margins, however we may be able to sustain low margins in the short term to try and hold onto our customer base.

As we have had such a strong monopoly of the market we should already have sufficient economies of scale to be able to withstand the lower profit margins for longer than the competitor.

We may even be able to undercut them so that they can't gain any of market share.

Alternatively, as we are already an established name in the market we may be able to rely on brand loyalty and keep our prices high.

By keeping a high price our customer may also perceive our product to be of higher quality.

This could work particularly well because this is an executive game and presumably the customer would be more likely to choose quality over a lower price.

ACCA marking scheme		
		Marks
(a)	Definition	1.0
		1
(b)	Correct gradient	1.0
	Correct intersection	1.0
	Correct linear relationship	1.0
		3.0
(c)	Correct PED calculation	1.5
	Correct revenue conclusion	0.5
		2
(d)	1 mark for each relevant comment	4
		10.0
Total		**10**

4 NEW CONTRACT

		Reasons	$
Paper	–	Book value is irrelevant because it is a sunk cost; as there is no other use, replacement would not occur so the opportunity cost or scrap sale proceeds is the relevant value.	2,500
Ink	–	Since this involves a future cost if the work is undertaken, the purchase price should be used. Since the remaining stock has no foreseeable use it has no value so the entire purchase cost is used.	3,000
Skilled labour	–	Since the weekend working is caused if the work is undertaken, the full cost is relevant: 125 hours @ $4/hr = $500 125 hours @ $5/hr = $625	1,125
Unskilled labour	–	The weekend work results in 50 hours time off in lieu – this, with the 75 other hours worked, totals 125 hours, which is less than the 200 hours of idle time which are already being paid for; thus there is no incremental cost.	Nil
Variable overhead	–	This is a future cost which will be incurred if the work is undertaken.	1,400
Printing press	–	The depreciation is a past cost and should be ignored, however the use of the press has an opportunity cost. If this work is undertaken, then the press is not available for hire. The opportunity cost is the contribution which would be earned from hiring: 200 hours @ ($6 – $3)	600
Production fixed costs	–	As these costs are unaffected by the decision they should be ignored	Nil
Estimating costs	–	These costs are past or sunk costs and should be ignored.	Nil
Minimum price			$8,625

ACCA marking scheme	
	Marks
Up to 2 marks per cost type with explanation	15.0
Total	**15**

5 HPS

Tutorial note

This question tests your knowledge of Decision Trees, a topic that perfectly illustrates the Examiner's 'toolbox' philosophy whereby a methodical, step-by-step approach will guarantee maximum marks. Ensure you have practiced plenty of Decision Trees questions to build your confidence: Question 1 from the June 2013 exam is a must. You should also read the excellent article written by a member of the F5 examining team on Decision Trees, featured on the ACCA website.

(a)


QF
C
London
Land & equipment: $10 m
A
Strong economy : prob. 0.4
1.2 million visitors a year
Net contribution: $15.6 m p.a.
Stable economy : prob 0.3
1 million visitors a year
Net contribution: $13 m p.a.
Weak economy : prob. 0.3
0.8 million visitors a year
Net contribution : $10.4 m p.a.
EV (A) = $13.26m
Edinburgh
Land & equipment: $9 m
B
Strong economy : prob. 0.4
1.5 million visitors a year
Net contribution : $22.5 m p.a.
Stable economy : prob 0.3
1.1 million visitors a year
Net contribution: $16.5 m p.a.
Weak economy : prob. 0.3
0.5 million visitors a year
Net contribution: $7.5m p.a.
EV (B) = $16.2m

EV (A) = ($15.6 m × 0.4) + ($13 m × 0.3) + ($10.4 m × 0.3)

EV (A) = $13.26 m

Taking away the cost of land and equipment in London, the net profit for the 'London' option is $13.26m – $10 m = $3.26 m.

EV (B) = ($22.5 m × 0.4) + ($16.5 m × 0.3) + ($7.5 m × 0.3)

EV (B) = $16.2 m.

Taking away the cost of land and equipment in Edinburgh, the net profit for the 'Edinburgh' option is $16.2m – $9 m = $7.2 m.

The Edinburg option should therefore be chosen by HPS, as it is the most profitable of the two alternatives.

(b) Perfect Information will indicate for certain whether demand will be weak, moderate, or strong.

Perfect information is said to be available when a 100% accurate prediction can be made about the future. Imperfect information, on the other hand, is not 100% accurate but provides more knowledge than no information.

The principles applied for calculating the value of imperfect information are the same as those applied for calculating the value of perfect information, but the value of imperfect information will always be less than the value of perfect information, unless both are zero.

Marking scheme		
		Marks
(a)	2 alternative branches appear, one for London and one for Edinburgh	1
	Land and equipment costs written down both times, 0.5 each	1
	3 states of the economy out of each option	1
	3 numbers of visitors associated with states of economy	1
	Economic probabilities 0.4, 0.3 and 0.3 appear on branches	1
	Net contributions London, F/T, 0.5 each	1.5
	Net contributions Edinburgh, F/T, 0.5 each	1.5
	Layout mark	1
	EV(A) F/T	1
	EV(B) F/T	1
	Conclusion best location F/T	1
(b)	Every valid comment/comparison 1 mark, maximum 3 marks.	3
Total		**15**