Answers

Section A

1 C

Divisional profit before depreciation = $2·7m x 15% = $405,000 per annum.
Less depreciation = $2·7m x 1/50 = $54,000 per annum.
Divisional profit after depreciation = $351,000
Imputed interest = $2·7m x 7% = $189,000
Residual income = $162,000.

2 D

Option (ii) is not relevant since it is a common cost.

3 C

A target cost is arrived at by identifying the market price of a product and then subtracting a desired profit margin from it.

4 C

The maximum regret at each supply level is as follows:

At 325: $142
At 350: $90
At 375: $82
At 400: $120

The minimum of these is $82 at 375, therefore the answer is C.

5 A

Statement (ii) describes an enterprise resource planning system, not an executive information system.

6 B

The method of apportioning general fixed costs is not required to calculate the break-even sales revenue.

7 C

All of the others are internal sources of information.

8 D

Statement (ii) is wrong as it reflects the common misconception that the shadow price is the maximum price which should be paid, rather than the maximum extra over the current purchase price.

Statement (iii) is wrong but could be thought to be correct if (ii) was wrongly assumed to be correct.

9 B

$320 – $80/(6/60) = $2,400

10 B

ROCE can be calculated by multiplying the operating profit margin and the asset turnover.

28% x 65% = 18·2%

11 C

Labour hours per unit	1	2	1·1
	$	$	$
Profit per unit	44	51	26
Add back fixed costs	6	9	12
Contribution per unit	50	60	38
Contribution per labour hour	50	30	34·55
Ranking	1st	3rd	2nd

12 B

All of the statements are false except statement (iii).

13 D

The first statement is wrong because customers are actually paying more quickly.
The second statement is wrong because inventory levels have increased.

14 A

Planning variance = ($3·80 – $5) x 10,000 = $12,000 A

15 A

The sales quantity contribution variance is calculated as follows:

	Actual sales units in std mix	Standard sales units in std mix	Difference in units	Standard contribution	Variance
Product A	16,020	15,840	180F	$12	$2,160F
Product B	10,680	10,560	120F	$13	$1,560F
Total					$3,720F

16 C

The learning rate was actually better than expected and only (i) could cause it to improve.

17 A

This is the correct option as environment-driven costs are allocated to general overheads, not joint cost centres.

18 A

The first statement is incorrect as the difference between actual quantity in standard mix and the actual quantity in the actual mix is valued at the standard cost per kg, not the actual cost.

The second statement is incorrect as that is the definition of the yield variance.

19 A

Working
Opening capital employed: $4m + $0·5m = $4·5m
Closing capital employed: ($4m x 0·9) + ($0·5 x 1·2) = $3·6m + $0·6 = $4·2m
Average capital employed = $4·35m
Profit after depreciation = $1·2m
Therefore ROI = $1·2m/$4·35m = 27·59%

20 A

The first statement is correct as throughput accounting discourages production for inventory purposes and is often used in a just in time environment.

The second statement is incorrect as in throughput accounting it is the bottleneck resource which should be 100% efficient which actually may mean unused capacity elsewhere.

Section B

1 (a) Beckley Hill

Annual activity per cost driver

Procedure	A	B	Total
No. of procedures	14,600	22,400	37,000
Admin. time per procedure (hours)	14,600	33,600	48,200
Patient hours	350,400	1,075,200	1,425,600
Number of meals	14,600	89,600	104,200

Cost driver rates

Administrative costs – \$1,870,160/48,200 = \$38·80 per admin hour
Nursing costs – \$6,215,616/1,425,600 = \$4·36 per patient hour
Catering costs – \$966,976/104,200 = \$9·28 per meal
General facility costs – \$8,553,600/1,425,600 = \$6 per patient hour

Overhead allocation per procedure

Procedure	A	B
Administrative costs	38·80	58·20
Nursing costs	104·64	209·28
Catering costs	9·28	37·12
General facility costs	144·00	288·00
	296·72	592·60
Add direct costs:		
Surgical	1,200	2,640
Anaesthesia	800	1,620
Total cost per procedure	2,296·72	4,852·60

(b) When activity-based costing (ABC) is used as in (a) above, the cost for Procedure A is approximately \$2,297 as compared to the approximate \$2,476 currently calculated by BH. For Procedure B, the cost using ABC is approximately \$4,853 as compared to the approximate current cost of \$4,736. Hence, the cost of Procedure A goes down using ABC and the cost of Procedure B goes up. This reflects the fact that the largest proportion of the overhead costs is the nursing and general facility costs. Both of these are driven by the number of patient hours for each procedure. Procedure B has twice as many patient hours as Procedure A. Whilst this is not taken into account when the overheads are simply being divided by the number of procedures and allocated to each product, it would be if ABC were adopted instead. Hence, the allocation of costs would more fairly reflect the use of resources driving the overheads.

However, ABC can be a lot of work to implement, and whilst the comparative costs are different, they are not significantly different. Given that ABC is costly to implement, it may be that a similar allocation in overheads can be achieved simply by using a fairer basis to absorb the costs. If patient hours are used as the basis of absorption instead of simply dividing the overheads by the number of procedures, the costs for Procedures A and B would be \$2,296 and \$4,853 (W1). Hence, the same result can be achieved without going to all of the time and expense of using ABC. Therefore BH should not adopt ABC but use this more accurate basis of absorbing overheads instead.

Working 1

\$17,606,352/1,425,600 hours = \$12·35 per hour.
Therefore absorption cost for A = \$1,200 + \$800 + (24 x \$12·35) = \$2,296.
Same calculation for B but with 48 hours instead.

2 Mobe Co

From the group's perspective

For every motor sold externally, Division M generates a profit of \$80 (\$850 – \$770) for the group as a whole. For every motor which Division S has to buy from outside of the group, there is an incremental cost of \$60 per unit (\$800 – [\$770 – \$30]). Therefore, from a group perspective, as many external sales should be made as possible before any internal sales are made. Consequently, the group's current policy will need to be changed. This does, however, assume that the quality of the motors bought from outside the group is the same as the quality of the motors made by Division M.

Division M's total capacity is 60,000 units. Given that it can make external sales of 30,000 units, it can only supply 30,000 of Division S's demand for 35,000 motors. These 30,000 units should be bought from Division M since, from a group perspective, the cost of supplying these internally is \$60 per unit cheaper than buying externally. The remaining 5,000 motors required by Division S should then be bought in from the external supplier at \$800 per unit. .

In order to work out the transfer price which should be set for the internal sales of 30,000 motors, the perspective of both divisions must be considered.

From Division M's perspective
Division M's only buyer for these 30,000 motors is Division S, so the lowest price it would be prepared to charge is the marginal cost of making these units, which is $740 per unit. However, it would ideally want to make some profit on these motors too and would consequently expect a significantly higher price than this.

From Division S's perspective
Division S knows that it can buy as many external motors as it needs from outside the group at a price of $800 per unit. Therefore, this will be the maximum price which it is prepared to pay.

Overall
Therefore, the transfer price should be set somewhere between $740 and $800. From the perspective of the group, the total group profit will be the same irrespective of where in this range the transfer price is set. However, it is important that divisional managers and staff remain motivated. Given the external sales price which Division M can achieve and the fact that Division S would have to pay $800 for each motor bought from outside the group, the transfer price should probably be at the higher end of the range.

3 Bokco

(a) Planning and operational variances

Revised hours for actual production:
Cumulative time per hour for 460 units is calculated by using the learning curve formula: $Y = ax^b$
$a = 7$
$x = 460$
$b = –0{\cdot}1520$

Therefore $y = 7 \times 460^{-0{\cdot}1520} = 2{\cdot}7565054$
Therefore revised time for 460 units = 1,268 hours.

Labour efficiency planning variance
(Standard hours for actual production – revised hours for actual production) x std rate
= ([460 x 7] – 1,268) x $12 = $23,424F

Labour efficiency operational variance
(Revised hours for actual production – actual hours for actual production) x std rate
(1,268 – 1,860) x $12 = $7,104A

(b) Consequences of failure to anticipate learning effect

The likely consequences are as follows:

- Bokco will have hired too many temporary staff because of the fact that the new product can actually be produced more quickly than originally thought. Given that these staff are hired on three-month contracts, Bokco will presumably have to pay the staff for the full three months even if all of them are not needed. This will be a significant and unnecessary cost to the business.
- Since production is actually happening more quickly than anticipated, the company may well have run out of raw materials, leading to a stop in production. Idle time is a waste of resources and costs money.
- If there have been stockouts, the buying department may have incurred additional costs for expedited deliveries or may have been forced to use more expensive suppliers. This would have made the material price variance adverse and negatively affected the buying department's manager bonus, which would have a demotivational effect on him.
- Since Bokco uses cost plus pricing for its products, the price for the product will have been set too high. This means that sales volumes may well have been lower than they otherwise might have been, leading to lost revenue for the company and maybe even failure of the new product launch altogether. This will continue to be the case for the next two months unless the price review is moved forward.
- The sales manager will be held responsible for the poorer sales of the product, which will probably be reflected in an adverse sales volume variance. This means that he may lose his bonus through no fault of his own. This will have a demotivational effect on him.

Note: Other valid points could be made too.

4 ALG Co

(a) Variable cost per unit

Material cost = $2,400,000/200,000 = $12 per unit.
Labour cost = $1,200,000/200,000 = $6 per unit.
Variable overhead cost using high-low method: ($1,850,000 – $1,400,000)/(350,000 – 200,000) = $3 per unit.
Therefore total variable cost per unit = $21.
Fixed costs = $1,400,000 – (200,000 x $3) = $800,000

(b) Optimum price

Find the demand function
Demand function is P = a – bx, where P = price and x = quantity, therefore find a value for a and b firstly.

B = ΔP/ΔQ = 2/2,000 = 0·001 (ignore the minus sign as it is already reflected in the formula P = a – bx.)

Therefore P = a – 0·001x

Find value for 'a' by substituting in the known price and demand relationship from the question, matching 'p' and 'x' accordingly.

60 = a – (0·001 x 250,000)
60 = a – 250
310 = a

Therefore P = 310 – 0·001x.

Identify MC
MC = $21 calculated in (a)

State MR
MR = 310 – 0·002x

Equate MC and MR to find x
21 = 310 – 0·002x
0·002x = 289
x = 144,500

Substitute x into demand function to find P
P = 310 – (0·001 x 144,500)
P = $165·50

Calculate profit
Sales revenue = 144,500 x $165·50 = $23,914,750
Variable overheads = 144,500 x $21 = $3,034,500
Fixed overheads = $800,000
Therefore profit = $20,080,250

(c) Market skimming
As the sales director suggests, market skimming is a strategy which initially charges high prices for the product in order to take advantage of those buyers who want to buy it as soon as possible, and are prepared to pay high prices in order to do so.

If certain conditions exist, the strategy could be a suitable one for ALG Co. The conditions are as follows:

– Where a product is new and different, so that customers are prepared to pay high prices in order to gain the perceived status of owning the product early. All we know about ALG Co's product is that it is 'innovative', so it may well meet this condition.

– Where products have a short life cycle this strategy is more likely to be used, because of the need to recover development costs and make a profit quickly. ALG Co's product does only have a three-year life cycle, which does make it fairly short.

– Where high prices in the early stages of a product's life cycle are expected to generate high initial cash inflows. If this is the case here, then skimming would be useful to help ALG Co cover the high initial development costs which it has incurred.

– Where barriers to entry exist, which deter other competitors from entering the market; as otherwise, they will be enticed by the high prices being charged. These might include prohibitively high investment costs, patent protection or unusually strong brand loyalty. According to the information we have been given, high development costs were involved in this case, which would be a barrier to entry.

– Where demand and sensitivity of demand to price are unknown. In ALG Co's case, market research has been carried out to establish a price. However, this information is based on the launch of similar but not identical products, so it is not really known just how accurate it will be.

It is not possible to say for definite whether this pricing strategy would be suitable for ALG Co, because of the limited information available. However, it could always be launched at a higher price initially to see what demand is. It is far easier to lower a price after launch than to raise it. The optimum pricing approach in (b) above is based on a set of assumptions which do not hold true in the real world. Also, as the data is derived from similar but not identical products, it may not hold true for this particular product.

5 (a) Main steps

1. Activities are identified by managers. Managers are then forced to consider different ways of performing the activities. These activities are then described in what is called a 'decision package', which:

   – analyses the cost of the activity;
   – states its purpose;
   – identifies alternative methods of achieving the same purpose;
   – establishes performance measures for the activity;
   – assesses the consequence of not performing the activity at all or of performing it at different levels.

   As regards this last point, the decision package may be prepared at the base level, representing the minimum level of service or support needed to achieve the organisation's objectives. Further incremental packages may then be prepared to reflect a higher level of service or support.

2. Management will then rank all the packages in the order of decreasing benefits to the organisation. This will help management decide what to spend and where to spend it. This ranking of the decision packages happens at numerous levels of the organisation.

3. The resources are then allocated based on order of priority up to the spending level available.

(b) Potential problems

At present, the LRA finds itself facing particularly difficult circumstances. The fires and the floods have meant that urgent expenditure is now needed on schools, roads and hospitals which would not have been required if these environmental problems had not occurred. Lesting is facing a crisis situation and the main question is therefore whether this is a good time to introduce anything new at the LRA when it already faces so many challenges.

The introduction of ZBB in any organisation is difficult at any time because of the fact that the process requires far more skills than, for example, incremental budgeting. Managers would definitely need some specialist training as they simply will not have the skills which they would need in order to construct decision packages. This then would have further implications in terms of time and cost, and, at the moment, both of these are more limited than ever for the LRA. When so many costs are being faced by the LRA, can it really consider spending money on training staff to prepare and evaluate decision packages?

Given that the budget needs preparing imminently as the new financial year is approaching, it is really too late to start training staff. With ZBB, the whole budgeting process becomes a lot more cumbersome as it has to be started from scratch. There is a lot of paperwork involved and the whole process of identifying decision packages and determining their costs and benefits is extremely time-consuming. There are often too many decision packages to evaluate and there is frequently insufficient information for them to be ranked. The LRA provides a wide range of services and it is therefore obvious that this would be a really lengthy and costly process to introduce. At the moment, some residents are homeless and several schools have been damaged by fire. How can one rank one as more important than the other when both are equally important for the community? Sometimes, the information needed in order to rank them simply will not be available, or managers will not feel able to assimilate it properly.

Another problem with ZBB is that it can cause conflict to arise as departments compete for the resources available. Since expenditure is urgently required for schools, roads and hospitals, it is likely that these would be ranked above expenditure on the recycling scheme. In fact, the final phase of the scheme may well be postponed. This is likely to cause conflict between departments as those staff and managers involved in the recycling scheme will be disappointed if the final phase has to be postponed.

(c) The potential benefits

– ZBB will respond to changes in the economic environment since the budget starts from scratch each year and takes into account the environment at that time. This is particularly relevant this year after the fires and the floods. Without ZBB, adequate consideration may not be given to whether the waste management scheme should continue but, if ZBB is used, the scheme will probably be postponed as it is unlikely to rank as high as expenditure needed for schools, housing and hospitals.
– If any of the activities or operations at LRA are wasteful, ZBB should be able to identify these and remove them. This is particularly important now when the LRA faces so many demands on its resources.
– Managers may become more motivated as they have had a key role in putting the budget together.
– It encourages a more questioning attitude rather than just accepting the status quo.
– Overall, it leads to a more efficient allocation of resources.
– All of the organisations activities and operations are reviewed in depth.
– ZBB focuses attention on outputs in relation to value for money. This is particularly important in the public sector where the 3 Es (economy, efficiency and effectiveness) are often used to measure performance.

Note: Only three were required.

Section A	*Marks*
2 marks per question	**40**

Section B

1	**(a)**	**ABC calculation**	
		Correct cost driver rates	2
		Overhead unit cost for A	1·5
		Overhead unit cost for B	1·5
		Total cost for A	0·5
		Total cost for B	0·5
			6
	(b)	Discussion	
		Per valid point	2
		Maximum	4
		Total marks	**10**
2		Division M's external sales generate $80 per unit	1
		Divison S's external purchases cost $60 per unit	1
		Comparison of the $60 & $80	1
		Reasoned conclusion that Div M should make 30,000 external sales	2
		Division S should buy 5,000 units from outside	1
		Co policy should be changed	1
		Minimum TP from Division M's perspective	1
		Maximum TP from Division S's perspective	1
		Range of TPs discussed	2
		Irrelevant to group which TP charged	1
		Total marks (maximum)	**10**
3	**(a)**	Advanced variances	
		Revised labour hours	1
		Planning variance	2
		Operational variance	2
			5
	(b)	Consequences	
		Maximum per point	2
			5
		Total marks	**10**

4 **(a)** Costs

Material cost	0·5
Labour cost	0·5
Variable overhead cost	1
Total variable cost	0·5
Fixed costs	0·5
	3

(b) Optimum price and profit

Find value for b	1
Find value for a	1
Identify MC (figure from (a))	0·5
State MR function with values for a and b	0·5
Equate MC and MR to find x	1·5
Substitute x in to find P	1
Calculate profit	1·5
	7

(c) Market skimming

Discussion of each condition – maximum 4	1
Criticisms of optimal pricing – maximum 2	1
Conclusion	1
Maximum	5
Total marks	**15**

5 **(a)** Steps

Identification of decision packages	1
Rank	1
Allocation of resources	1
	3

(b) Problems

Times more difficult at minute	2
Need more skills and training	2
Less money now than ever	2
Too late in terms of timing now	2
Lots of paperwork and time	2
Can cause conflicts	2
Other valid points	2
Overall maximum	9

(c) Benefits

Per point	1
	3
Total marks	**15**