STRATEGIC PERFORMANCE MANAGEMENT

PROFESSIONAL 2 EXAMINATION - AUGUST 2019

NOTES:
You are required to answer **ALL** Questions.

PRESENT VALUE TABLES ARE PROVIDED

Time Allowed
3.5 hours plus **20 minutes** to read the paper.

Examination Format
This is an open book examination. Hard copy material may be consulted during this examination subject to the limitations advised on the Institute's website.

Reading Time
During the reading time you may write notes on the examination paper, but you may not commence writing in your answer booklet.

Marks
Marks for each question are shown. The pass mark required is 50% in total over the whole paper.

Answers
Start your answer to each question on a new page.

You are reminded to pay particular attention to your communication skills, and care must be taken regarding the format and literacy of your solutions. The marking system will take into account the content of your answers and the extent to which answers are supported with relevant legislation, case law or examples, where appropriate.

Answer Booklets
List on the cover of each answer booklet, in the space provided, the number of each question attempted. Additional instructions are shown on the front cover of each answer booklet.

THE INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS IN IRELAND

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Time Allowed: 3.5 hours, plus **20 minutes** to read the paper.
You are required to answer **ALL** Questions.

Read the following case study and answer the questions which follow.

Case study: 'ECO Group Plc"

ECO Group Plc (The Group) has been trading successfully for many years. However, Tom Winter, who was recently appointed CEO, has some ideas which he believes must be implemented so as to ensure future financial success. In particular, he believes that environmental considerations must be central to the Group's strategy in the future, much more so than in the past. Tom has explained: "This new emphasis on environmental issues isn't for any altruistic reasons. I'm well aware that, ultimately, I'm responsible for delivering a decent financial return to the shareholders. But 'environmentally friendly' is where profit will be made in the future and it makes financial sense for us to 'get in there first'. Sometimes, this type of change is painful and expensive, but it's necessary and the only way to achieve financial success in the medium to long-term". To illustrate this point, Tom has given a number of examples.

"First example: Many environmentally unfriendly products are coming to the end of their lifecycles as consumers get more environmentally conscious. We need to accept the consumer preference and replace such products with greener alternatives. However, that doesn't preclude us from continuing to make good profits in the final stages of a product's lifecycle by increasing market share at the expense of our competitors".

"Second example: The principle of divisional autonomy means that division managers can invest and divest capital funds. Now I'm fine with that, but as far as I'm concerned there are certain types of capital investment which have the potential to offer adequate return, and other types which don't. For example, an investment in something which is environmentally sustainable at least has the potential to be financially successful – so if the environmental issues and the financial numbers stack up then I'm all for it. But I don't want to do anything which might encourage division managers to invest in anything environmentally unfriendly because I know that financially it just isn't going to pay off".

"Third example, What's good for the environment is often good for business too, even in a simple cost management sense. Let me illustrate that point. Any cost manager will tell you that if an activity causes costs and creates little or no value then you should try to eliminate it. Often the same non-value adding activities are wasteful in an environmental sense too. Both accountants and environmentalists agree on the undesirability of complex supply chains, involving the transport of raw materials over long distances and the storage of large inventories which may ultimately be wasted. So I don't have to choose between being an effective cost manager and an environmentally conscious corporate citizen; the two things go hand-in-hand".

1. The **Able Division** manufactures and sells a product (XW) which is widely used in the construction industry. Although XW (and competitors' products) have sold well for many years, Able Division believes that products of this type are now reaching the end of their lifecycles because of concerns about their long term environmental impact. Accordingly, Able Division has adopted a strategy which is designed to achieve profitability for XW in what the division believes will be a quite short remaining product lifespan.

The only variable cost of manufacturing XW is raw materials. The following table shows the standard variable cost of manufacturing 95 kilograms of XW:

	Kilograms	**Purchase price**	**Total cost**
Raw material A	50 kg.	€16 per kg.	50 x €16 = €800
Raw material B	30 kg.	€18 per kg.	30 x €18 = €540
Raw material C	20 kg.	€28 per kg.	20 x €28 = €560
Total raw material input	**100 kg.**		**€1,900**
Less: Normal loss	5 kg.		
Normal output	**95 kg.**		

Last month, Able Division produced 19,000 kilograms of XW and sold these for €36.80 per kilogram (€1.80 per kilogram higher than the budgeted selling price). The actual sales quantity represented a 30% market share and was 5% less than the budgeted sales quantity. When Able Division was preparing its budget, the budget committee assumed that the division would have a 25% market share.

The actual costs of the raw materials purchased and used last month were as follows:

Raw material A	9,800 kg @ €16.50 per kg. =	€161,700
Raw material B	6,800 kg @ €17.50 per kg. =	€119,000
Raw material C	4,400 kg @ €29.50 per kg. =	€129,800
Total cost		**€410,500**

REQUIREMENT:

(a) Determine Able Division's budgeted and actual contributions for XW for last month. Then, carry out a variance analysis to reconcile the budgeted and actual contribution in as much detail as is possible from the information provided here.

(20 marks)

(b) Critically evaluate the success of the strategy adopted by Able Division in relation to XW. Justify your answer, having regard to the particular phase of the product's lifecycle (as identified in the question) and making use of the information available from your answer to part (a) above.

(8 marks)

[Total: 28 Marks]

2. The **Bearing Division** operates in the energy sector and consists of a number of business units, nearly all of which are involved in the processing and sale of fossil fuels. The division has been financially very successful in recent years and, because of this the Group has allowed the division manager considerable autonomy. In any year, the size of the division manager's bonus is determined by the extent to which the division's Return on Investment (ROI) exceeds its cost of capital (which is 6%). ROI is calculated by the Group as the net profit for the year divided by the net book value of the capital invested in the division at the beginning of the year.

On the basis of existing activities, it is likely that Bearing Division's net profit next year (2020) will be €340,000 and that the net book value of its assets at 1 January 2020 will be €2,000,000. These figures do not include the effect of a possible new investment by the division in an additional business unit which would be involved in the production and supply of solar energy. This new solar energy business unit (SEBU) would require an additional investment of €230,000 for tangible non-current assets plus €70,000 for working capital which the Group would be willing to finance. The investment would be made and operations would begin on 1 January 2020. It can be assumed that SEBU would have a five-year life, and that the working capital investment would be recovered in full at the end of that time. The tangible non-current assets would be depreciated on a straight-line basis over the five years with no residual value. It is estimated that the net operating cash flows from SEBU over the five years would be as follows:

2020:	€20,000
2021:	€60,000
2022:	€80,000
2023:	€90,000
2024:	€120,000

It should be assumed that all of these net operating cash flows would arise on the last day of the year to which they relate.

NB: Ignore taxation in answering this question.

REQUIREMENT:

(a) Given the manner in which divisional performance is evaluated and rewarded at present, is the Bearing Division manager likely to invest in SEBU? Justify your answer fully.

(9 marks)

(b) Respond to (i) and (ii) below, having regard to the best interests of the Group's shareholders, including the long-term strategic choices indicated by Tom Winter in the case study. Note: your answers to parts (i) and (ii) should include, but not be limited to, appropriate calculations:

(i) Discuss whether it would it be in the best interests of the Group's shareholders for Bearing Division to invest in SEBU.

(9 marks)

(ii) Appraise potentially superior alternatives to the existing ROI-based performance evaluation and reward system.

(9 marks)

[Total: 27 Marks]

3. The **Chasm Division**, which operates a number of factories, will open an additional manufacturing facility in Kildare at the beginning of next year. This factory will be treated as a profit centre for performance evaluation basis, and backflush accounting will be implemented. Its product will be sold at a price of €100 per unit. Costs at the factory will be as follows:

Fixed production overheads:	€380,000 per month
Direct labour and variable overheads:	€28 per unit of output
Direct materials:	€20 per unit of output

The following table shows the budgeted levels of operations for firstthree months at the Kildare factory:

	January 2020	**February 2020**	**March 2020**
Opening inventory of finished goods (units)	NIL	3,000	700
Units produced	27,000	24,000	24,800
Units sold	24,000	26,300	24,800
Closing inventory of finished goods (units)	3,000	700	700

A fast and reliable local supplier of raw materials has been identified, so the Kildare factory will not keep any inventories of raw material.

REQUIREMENT:

(a) Determine the profit of the Kildare factory for each of the three months (January, February, and March) assuming that backflush accounting is implemented. Show your workings.

(7 marks)

(b) For the month of March explain how your answer to part (a) would differ if production in that month were to be reduced by 500 units. Critically evaluate the following statement:

"The example of the Kildare factory provides evidence that the use of backflush accounting has the effect of incentivising profit centre managers both to generate sales and also to reduce inventory of finished goods".

(10 marks)

[Total: 17 Marks]

4. The **Delta Division** manufactures a product (the YY) at its factory in Cork. The YY has come under significant competitive pressure in recent years. The division manager is keen to identify opportunities to reduce the cost of manufacturing the product and/or any other possible ways of alleviating the competitive pressure.

The manufacture of each unit of YY requires 4 kilograms of raw material. At present, these raw materials are bought from a supplier in South America at a price of €2 per kilogram. In addition, Delta Division has to pay the costs of transporting these raw materials by air from South America to Cork (a distance of 8,000 kilometres). The air transport costs amount to €0.10 per thousand kilometres for each kilogram of raw materials. On arrival at the Cork factory, the raw materials are subjected to quality control tests which cost €150 per 1,000 kilograms. Direct labour costs at the Cork factory are €1.80 per unit of YY.

Delta Division is considering the possibility of sourcing these raw materials from a supplier in Dundalk instead of the existing one in South America. The Dundalk supplier's price for the raw materials would be €3.00 per kilogram. The Division would pay the costs of transporting the raw materials by rail from Dundalk to Cork. This is a distance of only 300 kilometres, but the Delta Division manager is disappointed that the cost driver rate for rail transport of the raw materials would be €0.05 per hundred kilometres. An advantage would be that the Dundalk supplier is an established and trusted business partner and, therefore, Delta Division would carry out only very basic quality control checks on incoming raw materials (at a cost of €50 for each 2,000 kilograms). Direct labour costs per unit of YY would not be affected by the change in raw materials supplier.

REQUIREMENT:

(a) Show the cost per unit of manufacturing YY:

- If the raw materials are sourced from South America.
- If the raw materials are sourced from Dundalk. (6 marks)

(b) Based on your answer to part (a) identify the reasons why the change in raw materials source (from South America to Dundalk) would impact on the cost per unit of manufacturing YY.

(4 marks)

(c) Evaluate ways in which the competitive position of the YY would change if Delta Division were to change its source of raw materials from South America to Dundalk.

(10 marks)

[Total: 20 Marks]

5. The **Educate-Accounting Division** was established just three months ago. The division produces high-quality training videos on innovative accounting topics and makes these available through a website on a paid-for basis. The website's users are believed to consist mainly of (i) students preparing for the advanced stages of professional accounting examinations and (ii) practising accountants who need to maintain comprehensive, up-to-date accounting knowledge.

The division manager is optimistic about the prospects for financial success. However, he recognises that the division has only recently commenced operations and believes strongly that the prospects for success can be greatly enhanced by a benchmarking exercise of key business processes with appropriate benchmarking partners. It will be necessary to look outside the Group for suitable benchmarking partners because none exist within it.

REQUIREMENT:
Select four key business processes and justify why each should form part of a benchmarking exercise for the Educate Accounting Division.

[Total: 8 Marks]

[Total: 100 Marks]

END OF PAPER

SUGGESTED SOLUTIONS

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SOLUTION 1

(a) Budgeted contribution last month:

- Budgeted SP = €36.80 - €1.80 = €35 per kg.
- Budgeted VC = €1,900 / 95 kg = €20 per kg.
- Budgeted contribution per unit = €35 - €20 = €15 per kg.
- Budgeted sales quantity = 19,000 / 0.95 = 20,000 kg.
- Total budgeted contribution = 20,000 * €15 = €300,000.

Actual contribution last month:

- (€36.80 * 19,000) - €410,500 = €288,700.

Materials Price Variance (MPV):

	Actual Price	Standard Price	Actual Quantity	Variance
A	€16.50	€16	9,800	€4,900 U
B	€17.50	€18	6,800	€3,400 F
C	€29.50	€28	4,400	€6,600 U
				Total MPV = €8,100 U

Materials Mix Variance (MMV):

	Actual Quantity, in actual mix	Actual Quantity, in standard mix [5:3:2]	Standard price per kilogram	[AQ in actual mix – AQ in standard mix]* Standard price per kilogram
A	9,800	50% * 21,000 = 10,500	€16	€11,200 F
B	6,800	30% * 21,000 = 6,300	€18	€9,000 U
C	4,400	20% * 21,000 = 4,200	€28	€5,600 U
	21,000	21,000		Total MMV = €3,400 U

Materials Yield Variance (MYV):

- Standard raw material cost per kilogram of output = €1,900 / 95 = €20.

- Actual Yield = 19,000 kg of output
  Standard Yield = 21,000 kg. * (95 / 100) = 19,950 kg of output

- MYV
  = (Actual Yield – Standard Yield) * Standard RM cost per kg of output
  = (19,000 – 19,950) * €20
  = €19,000 U.

OR: Alternative calculation of MYV:

	Actual Quantity, in standard mix	Standard Quantity, in standard mix	Standard price per kilogram	[AQ in standard mix – SQ in standard mix]* Standard price per kilogram
A	10,500	19,000 * (50/95) = 10,000	€16	€8,000 U
B	6,300	19,000 * (30/95) = 6,000	€18	€5,400 U
C	4,200	19,000 * (20/95) = 4,000	€28	€5,600 U
	21,000	20,000		Total MYV = €19,000 U

Sales Price Variance (SVV):

Actual Price	Budgeted Price	Actual Quantity	Variance
€36.80	€35	19,000	€34,200 F

Market Size Variance (MSZV):

Actual market size	Budget market size	Change in market size	Standard market share %	Std cont	MSZV
19,000 / 0.3 = 63,333.33	20,000 / 0.25 = 80,000	16,666.67	25%	€15	(16,666.67 * 25%) * €15 = €62,500 U

Market Share Variance (MSHV):

Actual quantity	Actual market size	Standard market share %	Standard share of actual market	Std cont	MSHV
19,000	63,333.33	25%	25% * 63,333.33 = 15,833.33	€15	(19,000 – 15,833.33) * €15 = €47,500 F

Reconciliation:

Budgeted contribution		**€300,000**
Materials Price Variance		€8,100 U
Materials Mix Variance (MMV):	€3,400 U	
Materials Yield Variance (MYV):	€19,000 U	
Materials Use Variance (MUV):	----------	€22,400 U
Sales Price Variance (SVV):		€34,200 F
Market Size Variance (MSZV):	€62,500 U	
Market Share Variance (MSHV):	€47,500 F	
Sales Volume Variance (SVV)	----------	€15,000 U
Actual contribution		**€288,700**

(b) The strategy seems to have centred around trying to achieve an increased share of a declining market. The evidence for this is that market share increased significantly (from budgeted 25% to actual 30%). This helped somewhat to offset the fact that the total market shrank very significantly in size (from 80,000 units budgeted to 63,333 units actual).

How was this achieved? It seems likely that the quality of the product was deliberately improved. All of the variances in relation to raw materials are unfavourable. Able Division may have purchased more expensive versions of the raw materials (MPV €8,100 U), combined them in ways which made more use of the more expensive types B and C (MMV €3,400 U), and been more stringent in the removal of wastage in production (MYV €19,000 U).

Was this financially successful? In short, yes. The combined cost of the 3 raw materials variances referred to above is €30,500). But the benefits (in terms of an increased market share and a higher selling price) were €34,200 F + €47,500 F = €81,700. So it could be said that there was a net gain from the strategy of (€81,700 - €30,500 = €51,200).

Why then was the actual total contribution for the month below budget? Only because of the market size variance (€62,500 U) which was uncontrollable by the Able Division. If Able Division had not adopted the strategy that it did, then the decrease in contribution experienced would have been far worse than it actually was.

Tutorial notes

Purpose of question: To require candidates to conduct a detailed and advanced variance analysis (Syllabus Area 2) and then to use the results of that analysis to identify and critically evaluate the competitive strategy which an organisation appears to have adopted (Syllabus Area 4)

Options: There is scope to lay out calculations in a variety of ways in the answer to part (a). In parts (b) there is scope to vary the approach taken, although there are some essential elements (see below).

Essential components: In part (a) candidates need to be identify the maximum level of detail which is possible from the data provided and must conduct the variance analysis accordingly. In part (b) candidates must identify that (although actual profit was below budget) there is evidence of a clear and effective strategy whose benefits can be quantified and can be shown to have prevented a far worse outcome than the one which actually resulted.

SOLUTION 2

(a) ROI of SEBU:

	2020	2021	2022	2023	2024
Net operating cash flows	€20K	€60K	€80K	€90K	€120K
Depreciation	€230K / 5 = €46K	€46K	€46K	€46K	€46K
Operating profit (loss)	**(€26K)**	**€14K**	**€34K**	**€44K**	**€74K**
Investment base	€230K + €70K = €300K	€300K - €46K = €254K	€254K - €46K = €208K	€208K - €46K = €162K	€162K - €46K = €116K
ROI	**(8.7%)**	**5.5%**	**16.3%**	**27.2%**	**63.8%**

Without SEBU:
- o ROI in 2020 = €340K / €2M = 17%.
- o In subsequent years: ROI likely to increase as the investment base shrinks due to depreciation.

Likely decision by Bearing Division manager → NOT likely to make the investment in SEBU, because it would reduce the existing division average ROI (17%) in the immediate next three years (2020 to 2022 inclusive).

Admittedly the investment in SEBU would apparently increase the division average ROI (17%) in the subsequent two years (2023 and 2024) but this is not likely to be decisive given that:

- o the more immediate years are likely to have a more significant impact on the division manager's choice, and

- o there are only two years when ROI increases compared to three years when ROI decreases.

(b)

(i) Shareholders' best interests

NPV analysis:

Cash flows:

		← 31st December each year →				
	1st Jan 2020	**2020**	**2021**	**2022**	**2023**	**2024**
Capital investment	(€300K)					
Recovery of working capital						€70K
Net operating cash flows		€20K	€60K	€80K	€90K	€120K
Net cash flows	**(€300K)**	**€20K**	**€60K**	**€80K**	**€90K**	**€190K**

NPV @ 6%
= - €300K + (€20K * 0.943) + (€60K * 0.890) + (€80K * 0.840) + (€90K * 0.792) + (€190K * 0.747)

= + €52,670

Positive NPV ⇒ in purely financial terms, investment in SEBU apparently would generate positive shareholder value and would be in shareholders' best interests.

Long-term strategic choices:

The Group has made an explicit strategic judgment that any of its existing business activities which are environmentally unfriendly have only limited commercial potential in the long run. Consequently, the Group has determined that its best financial interests require it to seek out more environmentally-friendly alternatives which are more sustainable and therefore have greater long-term potential. So far as Bearing Division is concerned, the SEBU investment in solar energy is exactly the kind of investment which the Group would like to see undertaken, given that the division's existing fossil fuel based activities are of the type which the Group perceives as being near the end of their commercial life.

(ii) Alternative performance evaluation and reward systems

Option 1: Residual Income as an alternative performance measure:

Finance charge ("investment base" as measured in part [a] * 6% cost of capital):

	2020	**2021**	**2022**	**2023**	**2024**
Finance charge	6% * €300K = €18K	6% * €254K = €15,240	6% * €208K = €12,480	6% * €162K = €9,720	6% * €116K = €6,960

Hence: Residual income:

	2020	**2021**	**2022**	**2023**	**2024**
Operating profit (loss) from part [a]	(€26K)	€14K	€34K	€44K	€74K
Finance charge	€18K	€15,240	€12,480	€9,720	€6,960
Residual income	**(€44,000)**	**(€1,240)**	**€21,520**	**€34,280**	**€67,040**

It seems unlikely in this case that Residual Income will significantly increase the likelihood that the division manager would take the decision to invest in SEBU, even if s/he were assessed on the basis of Residual Income. As shown here the Residual Income effect is negative in both of the first two years (2020 and 2021) and only becomes positive thereafter.

Option 2: An alternative single financial performance measure:

It is possible that EVA TM might show a more unambiguously positive trend (e.g., with positive Residual Income every year) which would be more likely to encourage investment in SEBU. This might arise if, for example, the estimated net operating cash flows include significant projected expenditure on advertising and/or pure research in 2020 and 2021. Under accounting principles these are written off as incurred, but under the rules of EVA TM they would be deferred in recognition of their beneficial effect in future years.

Option 3: A multivariate performance evaluation and reward scheme:

The best way to encourage particular strategic choices may be to explicitly reward a division manager for pursuing them. For example, instead of determining Bearing Division manager's bonus on the basis of ROI alone, a system which explicitly rewards environmentally-friendly investments would encourage the division manager to invest in them. For example, part of his/her bonus might be linked to the proportion of revenues derived from green energy activities (like solar energy) as opposed to fossil fuel energy activities (which the division's existing business units are involved in).

Tutorial notes

Purpose of question: To require candidates to identify the likely impact on an ROI-based performance evaluation and reward system (Syllabus Area 3). Also, to require candidates to identify and appraise alternative systems, such as Residual Income, Economic Value Added TM, and multivariate performance evaluations, which might motivate division managers to pay greater attention to shareholder value and the implementation of the Group's strategic choices (Syllabus Areas 3 and 4).

Options: In the first subsection of part (b), IRR could be used in place of NPV. In the second subpart of part (b), the examples of options given in the suggested solutions can be replaced by others of equal potential merit and rigour.

Essential components: It is essential that, in part (a), candidates adopt a rigorous approach to demonstrating the division manager's likely decision in relation to SEBU. In part (b) it is essential that candidates identify that the investment in SEBU would be in shareholders' best interests, having regard to both discounted cash flow and strategic considerations. Also in part (b), it is essential that the alternatives suggested have the potential to achieve the desired motivation of the division manager and that they are critically and rigorously appraised.

SOLUTION 3

(a) Backflush accounting ⇒ Standard cost per unit = direct materials, i.e., €20.

Profit on backflush accounting basis:

	January	**February**	**March**
Sales	24,000 units sold *€100 = €2,400,000	26,300 units sold * €100 = €2,630,000	24,800 units sold * €100 = €2,480,000
Raw materials cost (of goods sold)	24,000 * €20 = €480,000	26,300 * €20 = €526,000	24,800 * €20 = €496,000
Direct labour and VO cost (of goods produced)	27,000 * €28 = €756,000	24,000 * €28 = €672,000	24,800 * €28 = €694,400
Fixed OH	€380,000	€380,000	€380,000
Profit	**€784,000**	**€1,052,000**	**€909,600**

(b) Effect on profit of the proposed change:

- On the basis of the original data provided, there will be stocks of 700 units both at the beginning and at the end of March. Therefore, production in March could be reduced by the suggested 500 units without having to reduce sales. Instead, the closing stock at the end of March would be reduced to (700 – 500 = 200) units.

- Effect on profits (backflush accounting basis):

- Sales; cost of goods sold ⇒ no effect (because: sales would not be reduced, as explained above).

- Fixed production overhead ⇒ no effect (because: fixed cost, not affected by change in production volume).

- Direct labour and variable overhead (DLVO) ⇒

- Cost incurred would be reduced by (500 units * €28) = €14,000.

- Because DLVO is written off to the income calculation in the month when production takes place, the effect would be to increase the profit for March by this amount (€14,000).

Critical evaluation:

- When a unit is sold, the amount credited to income for that month is (€100 selling price MINUS €20 raw materials cost of goods sold) = €80 per unit. Thus, when a manager sells more units, the monthly income figure increases at the rate of €80 per extra unit. So one reason for January having the lowest profit figure of the three months is simply that it has the smallest number of units sold.

- But the second factor affecting profit in any month is the amount of production. As shown in part (b) for the suggested change in March, if production can be reduced without reducing sales then the amount saved in terms of direct labour & variable overhead cost incurred is credited in the same month to the income calculation and thus increases the profit for that month. Therefore, the second reason why the profit for January was by far the lowest of the three months was that it was the month in which there was the greatest surplus of production (27,000 units) over sales (24,000 units). In this way, backflush accounting penalises a profit centre manager who increases stock levels and rewards a profit centre manager who decreases them.

Tutorial notes

- *Purpose of question:* To assess candidates' ability to implement a backflush accounting system (Syllabus Area 1) and to demonstrate and explain how backflush accounting may motivate profit centre managers to implement just-in-time (JIT) in a manufacturing environment (Syllabus Area 4).

- *Options:* The layout of calculations can differ from that shown in the suggested solution. The detailed logic of the critical evaluation may also differ so long as the essential components (see below) are covered.

- *Essential components:* It is essential that candidates determine profit on a backflush accounting basis for each month in part (a), and that they show the profit effect of the proposed change in part (b). in part (b), it is essential that candidates' critical evaluation identifies how backflush accounting incentivises profit centre managers both to sell more units and also to reduce stocks of finished goods.

SOLUTION 4

(a)

(i) Raw materials sourced from South America

Cost driver rates:

- Air transport cost
  = €0.10 * (8,000 / 1,000) = €0.80 per kilogram of raw materials

- Quality control inspection cost
  = €150 per batch [batch size = 1,000 kg. of raw materials]

Cost per unit of YY:

Air transport of raw materials: €0.80 * 4 kg. * =	€3.20
Quality control inspection of raw materials: €150 * (4 kg. / 1,000 kg) =	€0.60
Raw materials (purchase cost): €2 * 4 kg. =	€8
Direct labour	€1.80
Cost per unit of YY	**€13.60**

(ii) Raw materials sourced from Dundalk

Cost driver rates:

- Rail transport cost,
  = €0.05 * (300 / 100) = €0.15 per kilogram of raw materials

- Quality control inspection cost
  = €50 per batch [batch size = 2,000 kg. of raw materials]

Cost per unit of YY:

Rail transport: €0.15 * 4 kg. =	€0.60
Quality control inspection: €50 * (4 kg. / 2,000 kg.) =	€0.10
Raw materials (purchase cost): €3 * 4 kg. =	€12
Direct labour	€1.80
Cost per unit of YY	**€14.50**

(b) There are three factors at work here:

- Per kilogram of raw materials transported, rail transport is considerably more expensive than air transport (€0.05 per hundred kilometres >> €0.10 per thousand kilometres).However, this is more than compensated for by the distance (only 300 kilometres from Dundalk to Cork compared to 8,000 kilometres from South America to Cork).Ultimately the transport costs are much less with the Dundalk supplier (€0.60 per YY) than with the South American supplier (€3.20 per YY)

- Another advantage of the Dundalk supplier is the greatly reduced need for quality control inspection, so that this cost also is much cheaper per unit of YY with the Dundalk supplier (€0.10) than with the South American supplier (€0.60).

- Unfortunately the Dundalk supplier charges far more per kilogram for the raw materials, and this factor more than exceeds the combined total above two cost advantages of the South American supplier (per YY, raw material purchase costs are €12 from the Dundalk supplier compared to €8 from the South American supplier).

(c) The competitive position of the YY would change (both for worse and for better) if the supplier were to be changed from South America to Dundalk.

- The way in which the competitive position of the YY would disimprove would be in the increase in the cost of production (from €13.60 to €14.50 per unit). Assuming that the company does not wish to passively accept a corresponding decrease in its profits, it will need to find ways of convincing consumers that it is worth their while buying bigger volumes and/or paying a higher unit price because of factors such as those indicated below.

- One consequence of the change in the supply chain is that the carbon footprint of the product has almost certainly been reduced by the elimination of an 8,000 kilometre trip by the raw materials. This fact can be publicised so as to make the product more attractive to consumers who are concerned with carbon footprint.

- The fact that the supply chain now has a higher Irish element than before (raw materials bought from an Irish supplier and then transported over an Irish rail network) may be a competitive advantage if the YY product is sold on the Irish market.

Tutorial notes

- *Purpose of question:* To require candidates to carry out an activity-based cost analysis for decision-making (Syllabus Area 1) including where there are supply chain management issues (Syllabus Area 4).

- *Options:* The calculations can be laid out differently in part (a). In part (c), the precise points made may differ from those show here. All of this is subject to the essential components (see below).

- *Essential components:* In part (a) it is essential that candidates fully trace through the cost implications of the different sourcing options for raw materials. In part (b) it is essential to identify why the costs differ as they do, given that there are a number of forces at work (and in different directions). In part (c) it is essential that candidates identify the competitive disadvantage posed by the production cost increase and also that they evaluate qualitative improvements to the competive position which may arise from the supply chain changes.

SOLUTION 5

(1) Revenue management process, e.g., deciding on "pay per view" vs. "fixed monthly fee" and deciding what the fee should be (per view or month, as appropriate).

- Justification: Most costs will be fixed, so revenue optimisation is the key to success in profitability. Fees which are too low result in revenue loss (through customers paying less than they would be willing to pay) which translates almost wholly into loss of profits. Fees which are too high (or wrongly structured) drive away potential customers and therefore revenues and profits. Other firms have "been down the same learning curve" in trying to strike a balance in this regard and benchmarking would enable Educate-Accounting Division to learn from their experience.

(2) Process to limit user access, e.g., password control systems and systems to ensure that (for each subscription) only one computer can access the website at any one time.

- Justification: This is necessary to protect revenue streams, e.g. to ensure that a single subscription is not used to provide several viewers with access to content.

(3) Process to accept payments securely.

- Justification: All of the revenue comes from subscriptions. No customers will be willing to accept anything less than complete security for online payments.

(4) Process to monitor each user's activity.

- Justification: Users who avail of particular types of content should be targeted with other material which is likely to be of interest to them, so as to retain their business. This requires some kind of "recommendations" algorithm based on the user's prior content which is easily available to Educate-Accounting from each user's account history.

Tutorial notes

- *Purpose of question:* To require candidates to identify the scope for a benchmarking exercise and (Syllabus Area 5).
- *Options:* Valid alternatives to the four processes suggested here are acceptable.
- *Essential components:* It is essential that candidates state and justify four key business processes which are suitable for Educate-.