The Institute of Chartered Accountants of Nigeria (ICAN)

SKILLS LEVEL EXAMINATION

2019

Mock Exam

Performance Management

Answers

Question 1

(a) **Budgeted statements of profit or loss**

Statements of profit or loss for the year to 31 December 20X7

	Tandem	Dorly	Combined
	₦	₦	₦
Sales (see workings)	162,156,800	25,570,250	187,727,050
Fuel costs	77,550,000	25,410,000	102,960,000
Salaries	6,798,000	2,966,400	9,764,400
Other operating costs	5,150,000	1,650,000	5,800,000
Total costs	89,498,000	29,026,400	118,524,400
Profit/(loss)	72,658,800	-3,456,150	69,202,650

Workings

(W1) **Tandem revenues**

Year to 31 December 20X6		₦
Parcels		
Contract customers	160,000 × 70% × ₦250	28,000,000
Non-contract	160,000 × 30% × ₦250 × 130%	15,600,000
		43,600,000
Passengers		
Contract customers	90,000 × 60% × ₦400	21,600,000
Non-contract	90,000 × 40% × ₦400 × 120%	17,280,000
		38,880,000
Medical equipment		
Contract customers	8,500 × 80% × ₦8,000	54,400,000
Non-contract	8,500 × 20% × ₦8,000 × 140%	19,040,000
		73,440,000
Total revenue 20X6		155,920,000
Revenue 20X7 (× 1.04)		162,156,800

(W2) **Tandem costs**

Fuel costs: year to 31 December 20X6		₦
Parcels and passengers	250 km × 330 days × 35 × ₦20	57,750,000
Medical equipment	200 km × 330 days × 10 × ₦30	19,800,000
		77,550,000
Fuel costs 20X7		77,550,000
Salaries, 20X6		
Parcels and passengers	40 × ₦120,000	4,800,000
Medical equipment	15 × ₦120,000	1,800,000
		6,600,000
Salaries 20X7 (× 1.03)		6,798,000

Fixed costs in 20X7 will be ₦5,000,000 × 1.03 = ₦5,150,000.

(W3) **Dorly revenues**

Year to 31 December 20X7 (10% volume increase from 20X6)		₦
Parcels		
Contract customers	30,000 × 25% × ₦250 × 110%	2,062,500
Non-contract	30,000 × 75% × ₦250 × 130% × 110%	8,043,750
		10,106,250
Passengers		
Contract customers	19,000 × 25% × ₦400 × 110%	2,090,000
Non-contract	19,000 × 75% × ₦400 × 120% × 110%	7,524,000
		9,614,000
Security equipment		
Contract customers	5 × ₦500,000	2,500,000
	5 × ₦350,000	1,750,000
	8 × ₦200,000	1,600,000
		5,850,000
Total revenue 20X7		25,570,250

(W4) **Dorly costs**

Year to 31 December 20X7		
Fuel costs (allow for 10% increase in mileage)		₦
Parcels and passengers	120 km × 330 days × 10 × ₦25 × 110%	10,890,000
Security equipment	100 km × 330 days × 10 × ₦40 × 110%	14,520,000
		25,410,000
Salaries, 20X6		
Parcels and passengers	12 × ₦120,000 × 1.03	1,483,200
Security equipment	12 × ₦120,000 × 1.03	1,483,200
		2,966,400

(b) **Performance appraisal**

The combined entity is expected to make an operating profit margin of over 36% on sales. The margin for Tandem is expected to be 44%. These profit margins seem high. Margins will be improved in Tandem's operations in 20X7 because prices will be increased by 4% and cost increases will be limited to 3%.

Dorly in contrast expects to achieve 10% growth in sales volume. In spite of this volume increase, Dorly is expected to make a loss of about ₦3,456,150 in 20X7.

Revenue per vehicle

Revenue per vehicle is an important measure of efficiency. The ability of the company to improve profits depends on its ability to make full use of the vehicles.

A summary of revenue per vehicle in 20X6 and 20X7 is set out below.

Tandem	**20X6**	**20X7**
Parcels/passengers		
(43,600,000 + 38,880,000) ÷ 35	₦2,356,571	₦2,450,834
Medical		
73,440,000 ÷ 35	₦7,344,000	₦7,637,760

Tandem	**20X6**	**20X7**
Parcels/passengers		
(10,106,250 + 9,614,000) ÷ 35		₦1,972,025
× 100/110	₦1,792,750	
Security		
5,850,000 ÷ 10	₦585,000	₦585,000

These figures show for Tandem the revenue per vehicle is much lower for parcels and passenger services than for specialist deliveries. This might be due to greater competition in this part of the market, keeping prices low.

Dorly's parcels and passenger service vehicles were earning much lower revenues per vehicle in 20X6, but performance is expected to improve in 20X7, partly due to higher prices and partly because it is assumed that a sales volume increase of 10% will be achieved using the same number of vehicles.

Dorly's revenue per vehicle in the security market is disappointing given the effort made to secure these contracts. These contracts have been signed for three year periods. The company must either try to achieve operating efficiencies or perhaps gain new business of this type which might enable ot to benefit from economies of scale.

Vehicle utilisation and delivery mix

Vehicles operate for 330 days per year but Tandem's vehicles have higher daily usage as evidenced by the average kilometres per day.

This suggests that there is potential to increase utilisation of the Dorly passenger/ parcel vehicles.

The average kilometres a day is lower for medical equipment, at only 200 kilometres a day. The reason for this lower utilisation cannot be identified with the information available. However, if the average mileage for these vehicles could be increased to 250 kilometres, this would reduce the quantity of vehicles required, and would therefore increase the revenue per vehicle.

The delivery of medical equipment and security equipment is all same-day delivery. For parcels delivery, Dorly makes 75% of deliveries on the same day. For Tandem it is only 21%. This is a significant difference. There appears to be no difference in the prices charged for same-day and next-day delivery.

It might be appropriate to investigate the difference in this delivery mix between Tandem and Dorly, to find out whether same-day delivery is a matter that concerns customers. If customers are happy with next-day deliveries, it might be able to improve the vehicle utilisation of Dorly vehicles by increasing the proportion of deliveries that are next day.

Service quality

The percentage of deliveries made on time is a suitable measure of performance. A summary of performance in 20X6 is set out below.

	Tandem		Dorly	
	Parcels	Medical equipment	Parcels	Security equipment
On-time deliveries	96.1%	100%	79%	97%
Target	98%	98%	90%	100%

Tandem has beaten its target for on-time deliveries for medical equipment, but has not quite achieved the target for parcels deliveries. Even so, its target for parcels deliveries is higher than Dorly's (98% compared with 90%), although this might be partly due to the higher proportion of same-day deliveries made by Dorly.

Dorly has failed to achieve its targets. For parcels, it is a long way below target. Even the 97% on-time deliveries for security equipment might have serious implications for customer satisfaction.

Another aspect of service quality is the number of parcel items lost in delivery. This ought to be nil, but Dorly lost 32 parcels, which is over 1 in 1,000 items handled. This is unacceptable, and will have implications for customer satisfaction.

Clearly, considerable improvements are needed in the quality of Dorly's operations, in order to provide customers with a standard of service they will expect.

(c) PEST analysis

PEST analysis is an exercise in positional appraisal. It seeks to identify the current position of the business with regard to those factors which influence it from outside. These external influences are categorised under 4 headings:

- Political influences
- Economic influences
- Sociological influences
- Technological influences

It is particularly relevant to a company that considers itself vulnerable to a change in its current environment. The PEST analysis will seek to indentify those factors that might impact on the business and what the nature of that impact might be. In the case of a delivery and transport service possible factors might include :

Political:

- Introduction of congestion zones and charges in city centres
- Increases of taxation charges on private motor vehicles

Economic:

- Greater internet use resulting in less personal travel
- Impact of JIT and SCM adoption on number of deliveries required

Sociological:

- Demographic change might require staff to speak foreign languages
- Ageing population might require more use of hire cars

Technological:

- Advent of electric powered vehicles to reduce emissions
- IT systems might impact on vehicle routing and scheduling

These influences impact on both the level and nature of the service that might be demanded in the future. As just one example, increased adoption of supply chain management (SCM) and outsourcing might require Tandem to increasingly integrate its operation with that of its customers using IT as the medium. Such a process might require a fundamental change in the way Tandem does business which would require planning and investment and negotiation. The commercial transport sector is highly competitive and Tandem should move quickly as soon as any trend has been identified.

Whether some possible developments have favourable or adverse implications is not always obvious. The creation of a city centre congestion zone which vehicles have to pay a fee in order to enter might seem restrictive, at face value. But experience has shown that the road usage that is most affected is usage by private vehicles. People switch from private vehicles to public transport to such an extent that the increased business for providers more than offsets any congestion charge bills.

PEST therefore assists a business at the planning level by identifying likely future change and facilitating early and advantageous adaption to such change. It may also assist at the control level by helping to identify critical success factors to the business and allowing relevant performance benchmarks to be adopted.

Question 2

(a) **Marginal cost**

		hours
Hours required to meet sales demand		
Model V	(240,000/8)	30,000
Model X	(300,000/6)	50,000
		80,000
Hours available		70,000
Shortfall in hours		10,000

There are not enough hours in the finishing department to meet sales demand in full. Finishing department hours are a limiting factor. According to marginal costing principles, profit is maximised by producing and selling a mix of product that will maximise the contribution per unit of limiting factor used.

	Model V	**Model X**
	₦ per unit	₦ per unit
Sales price	40	32
Material cost	(25)	(15)
Variable production conversion cost	(5)	(2)
Contribution per unit	10	15
Units produced per hour	8	6
Contribution per hour	₦80	₦90
Priority for manufacture	2nd	1st

The profit-maximising budget is as follows:

	Units	**Total hours**	**Contribution per unit**	**Total**
			₦	₦
Model X	300,000	50,000	15	4,500,000
Model V (to use the remaining hours)	160,000	20,000	10	1,600,000
		70,000	Contribution	6,100,000
			Fixed costs	4,000,000
			Profit	2,100,000

(b) **Throughput accounting**

	Model V	**Model X**
	₦ per unit	₦ per unit
Sales price	40	32
Material cost	(25)	(15)
Throughput per unit	15	17
Units produced per hour	8	6
Throughput per hour	₦120	₦102

	₦
Operating expenses	
Long-term fixed costs (as in (a))	4,000,000
Short-term fixed costs (as in the question)	1,400,000
Total operating expenses	5,400,000
Finishing department hours	70,000
Operating cost per hour	₦77.14

(**Tutorial note**: In the answer to (a) the variable production conversion costs of making 300,000 units of Model X and 160 units of Model V is ₦1,400,000 in total. In throughput accounting, it is assumed that costs of this nature are not variable, but are short-term fixed costs.)

	Model V	**Model X**
Throughput per finishing department hour	₦120	₦102
Operating expense per finishing department hour	₦77.14	₦77.14
Throughput accounting ratio	1.56	1.32
Priority for manufacture	1st	2nd

In throughput accounting, a product is worth manufacturing if the throughput accounting ratio exceeds 1.0. The aim should be to maximise profit, and this is achieved by maximising the throughput accounting ratio for each unit of the constraining resource (which here is hours in the finishing department).

(c) **Profit maximisation (using throughput accounting)**

Applying throughput accounting principles, the profit-maximising budget is as follows.

	Units	**Total hours**	**Throughput per unit**	**Total**
			₦	₦
Model V	240,000	30,000	15	3,600,000
Model X (to use the remaining hours)	240,000	40,000	17	4,080,000
		70,000		
Total throughput				7,680,000
Operating expenses (see answer to (b)				5,400,000
Profit				2,280,000

(d) In marginal costing, contribution is measured as sales minus variable costs. Variable costs include variable overhead costs and direct labour costs. Throughput is similar to contribution, except that in throughput accounting, the only variable cost is the cost of raw materials and components. Direct labour and variable overheads are assumed to be fixed costs, at least in the short term.

In marginal costing, inventory is valued at variable production cost, including an amount for direct labour and variable production overhead in the valuation of work in progress and finished goods. In throughput accounting, all inventory, including work in progress and finished goods, is valued at the cost of their raw materials and components.

The difference in the treatment of variable production conversion costs (direct labour and overheads) explains the different results in the answers to (a) and (c).

Question 3

(a) **Planning variance**

	₦	
Original (ex ante) standard material cost per unit	4.4	
Revised (ex post) standard material cost per unit	3.8	
Material planning variance per unit	0.6	(F)
Number of units produced	2,000	
Material planning variance in total	₦1,200	(F)

Materials: operational usage variance

2,000 units of output:	Should use	Did use	Usage variance	Standard cost per litre	Usage variance	
	litres	litres	litres	₦	₦	
Material A	1,400	1,340	60 (F)	2	120	(F)
Material B	800	910	110 (A)	4	440	(A)
Material C	200	240	40 (A)	8	320	(A)
Total usage variance					640	(A)

Materials: price variance

	Should cost	Did cost	Price variance	
	₦	₦	₦	
1,340 litres of A	2,680	2,970	290	(A)
910 litres of B	3,640	3,450	190	(F)
240 litres of C	1,920	1,900	20	(F)
Total price variance			80	(A)

(b) **Mix variance**

Material	Actual usage		Std mix of actual total usage	Mix variance	Std cost per litre	Mix variance	
	litres		litres	litres	₦	₦	
A	1,340	(7)	1,452.5	112.5 (F)	2	225	(F)
B	910	(4)	830.0	80.0 (A)	4	320	(A)
C	240	(1)	207.5	32.5 (A)	8	260	(A)
	2,490		2,490.0			355	(A)

Yield variance

		litres	
2,000 litres of output	should use (× 1.2)	2,400	
	did use	2,490	
Yield variance	in litres	90	(A)

Standard cost per litre of input (₦3.8/1.2) = ₦3.1667

Yield variance in ₦	₦285	(A)

(c) A materials mix and yield variance can be useful for control purposes when several materials are mixed together in a process, and the mix of the materials is controllable by the manager responsible for the process. An adverse mix variance indicates that the mix of materials has been more expensive than the standard mix.

If the mix of materials is controllable, there is little information value in calculating the usage variance of each individual material. Instead, it is appropriate to calculate a yield variance for all the materials in total. A yield variance should be of control value, on the assumption that the quantities of materials used are controllable – for example, management should be able to control waste or scrap levels.

(d) Planning and operational variances are useful for control purposes when the original standard cost ceases to be realistic, and a more realistic (ex post) standard cost is considered more appropriate.

If this occurs during the course of a financial year, it might be considered unnecessary to alter the standard cost used for cost accounting purposes. However, for the purpose of control reporting, it is useful to inform operational managers of the realistic variances for which they are responsible.

Realistic variances are calculated by comparing actual results with the ex post standard.

A planning variance is the effect of the difference between the original (ex ante) standard and the ex post standard. A planning variance usually has little value for control purposes, unless managers are held accountable for the accuracy or reliability of the standard costs that are agreed in the annual budget.

Question 4

(a) (i) The current situation is as follows:

	Product A ₦	*Product B* ₦	*Product C* ₦	*Total* ₦
Sales (50,000 @ ₦4.50 etc)	225,000	390,000	262,500	
Cost of sales (50% etc)	112,500	234,000	78,750	
Inventory ($^{1.5}/_{12}$ × 112,500 etc)	14,063	39,000	6,562	
Receivables ($^{2}/_{12}$ × 225,000 etc)	37,500	97,500	32,813	
Payables ($^{2.5}/_{12}$ × 112,500 etc)	(23,438)	(48,750)	(9,844)	
Net current operating assets	28,125	87,750	29,531	145,406

Scenario 1

Under scenario 1 sales of A would increase by 25%, sales of B by 20% and sales of C by 30%, so purchases would have to rise by the same percentages to meet the required volume increases.

	Product A ₦	*Product B* ₦	*Product C* ₦	*Total* ₦
Net current operating assets (as above)	28,125	87,750	29,531	
Volume increases (25% etc)	7,031	17,550	8,859	
Revised totals	35,156	105,300	38,390	178,846

Scenario 1 requires an increase in net current operating assets of ₦33,440.

Scenario 2

Receivables will increase by a further 25%.

	Product A ₦	*Product B* ₦	*Product C* ₦	*Total* ₦
Net current operating assets (per scenario 1)	35,156	105,300	38,390	
Increase in receivables (25% × 37,500 × 1.25 etc)	11,719	29,250	10,664	
Revised totals	46,875	134,550	49,054	230,479

Scenario 2 requires an increase in net current operating assets of ₦85,073 from the current position.

Scenario 3

Receivables are reduced by 25% while the suppliers' credit periods fall slightly.

	Product A ₦	*Product B* ₦	*Product C* ₦	*Total* ₦
Net current operating assets (per scenario 1)	35,156	105,300	38,390	
Reduction in receivables (same figures as in scenario 2)	(11,719)	(29,250)	(10,664)	
Reduction in payables ($^{0.1}/_{12}$ × 112,500 × 1.25 etc)	1,172	2,340	2,559	
Revised totals	24,609	78,390	30,285	133,284

Scenario 3 permits a decrease in net current operating assets of ₦12,122 from the current position.

(b) The finance director might require the following other information before he renegotiates the company's overdraft requirements.

- expected cash flows of a capital nature, eg capital expenditure requirements or receipts from the sale of fixed assets.
- other non-current cash flows eg, payments of tax or dividends.
- other alternative sources of short and medium term funds such as term loans and their relative costs compared with overdrafts.
- what security the bank is looking for when granting the overdraft.
- the seasonality involved in the company's sales. If purchases have to be paid for throughout the year but all the sales are concentrated towards the end of the year, then the maximum overdraft required will be much more than estimated earlier.
- the reliability of the figures in the question. Are the estimated sales figures likely to be achieved? The finance director should look carefully at the basis on which these forecasts were drawn up.
- the relative likelihood of each of the scenarios he has envisaged. There is no point in negotiating a facility for the maximum overdraft under scenario 2, for example, if the probability of its occurring is only remote.

Essentially the finance director must consider the company's cash flow forecasts in the round, rather than just looking at cash from trading activities. The usual practice is to draw up a month-by-month cash flow estimate taking in all anticipated cash receipts and payments, which will reveal the maximum overdraft requirement over the forthcoming year.

Question 5

(a) **Financial performance and competitiveness**

KMP achieved a net profit that was over 12% in excess of budget in 20X6. Total sales grew by 7% in 20X6 compared with 20X5, in spite of the fact that the budget provided for very little revenue growth.

The net profit margin was 21.1%, compared with 19.9% in 20X5 and 19.5% in 20X4.

KMP appears to have established a very profitable and successful business in the three years since it was established.

The competitiveness of KMP can be judged to some extent by the increase in the number of clients, which has gone up from 160 in 20X4 to 350 in 20X5. The average revenue per client, however, has gone down. On average clients were paying for 23.6 days of advice in 20X6.

However, there is no information about the share of the market that KMP now has for professional advice.

(b) **Internal efficiency**

Internal efficiency can be measured by productivity. The budgeted number of chargeable client days was 7,700 days. The total number of adviser days in the year should have been 11,000 (50 × 220 days). This means that the budget was for 70% of days to be chargeable days, and 30% non-chargeable. Actual chargeable days were 8,250, which was 75% of total days, leaving 25% of days as non-chargeable days.

This indicates that actual productivity in earning revenue was better than the budget target.

Internal efficiency and external efficiency can both be measured by flexibility. KMP has a policy of restricting the team of advisers to 50. However, within this limit of 50 advisers, KMP has been flexible enough to respond to a pattern of customer demand in which the demand for accounting advice was less than budget but the demand for advice on compliance is much higher. This suggests that KMP has the flexibility to switch advisers from one speciality to another.

At an operational level, internal efficiency can be measured by process time. The information provided shows that the average time to complete each 'job' has continued to fall, indicating greater efficiency, and a growing number of 'jobs' are being completed within the target time of 10 days.

Internal efficiency can also be measured at an operational level by waste. Here, the performance is not as good as it might have been. Waste could be measured by the number of 'no fee' workshops given to clients. These have gone up by 50% since 20X4, to 15 workshops in 20X6. At two days per workshop, this represents 330 days that have been lost that might otherwise have been used to earn income. The potential loss of revenue at ₦1,400 a day was therefore ₦462,000.

Management should look into the reasons for the growth in the number of workshops, to establish what measures might be taken to reverse the trend.

(c) **External effectiveness**

External satisfaction can be measured by customer satisfaction and flexibility (as indicated earlier).

There are some indications that customer satisfaction is quite high. The growth in client numbers is one indicator.

A better indicator might be the rate of converting enquiries into 'sales'. The budget for 20X6 provided for 7,700 chargeable days and an average of 4 days per 'job'. This means that the budget provided for 1,925 'jobs'. It also provided for 6,600 enquiries from customers, which means that about 30% of enquiries would be converted into fee-earning work.

Actual results in 20X6 were 8,250 chargeable days, giving about 2,062.5 'jobs'. There were 5,900 enquiries, making a conversion rate of about 35% of enquiries into fee-earning work. This indicates that actual performance was better than budget in this all-important area of making sales.

Increasing customer satisfaction might also be evident in the decline in the number of customer complaints, which was down to 5 in 20X6.

However, it is not clear that the increasing number of consultations (business development) is having a significant effect in increasing sales. This should be investigated.

At an operational level, external effectiveness can be measured by delivery. There is only a limited amount of data, but the performance of the help desk indicates improvements in the service delivery, with the increasing percentage of calls being resolved. The 97% level of successfully-resolved enquiries in 20X6 is high, although management might set targets for more improvements in the future.

External effectiveness can also be measured by quality. The quality of professional advice might be measured by the number of unresolved disputes with customers, which has declined. However, quality can also be measured by the number of customer complaints, which has been increasing. The growth in complaints (up from 75 to 95 in 20X6) is inconsistent with improving customer satisfaction, and this is another aspect of performance that management should investigate.

Workings

		Budget 20X6		**Actual 20X6**
		₦		₦
Revenue	(2,600 × ₦1,400)	3,640,000	(2,750 × ₦1,400)	3,850,000
New clients	(5,100 × ₦1,200)	6,120,000	(5,500 × ₦1,200)	6,600,000
Established clients		9,760,000		10,450,000

		₦
Actual revenue		10,450,000
Budgeted revenue		9,760,000
Excess revenue		690,000
Notional revenue foregone from workshop days	(165 workshops × 2 days × ₦1,200)	396,000
Net excess revenue		294,000
Bonus paid to advisers (50%)		₦147,000

	Budget 20X6	Actual 20X6
	₦	₦
Revenue	9,760,000	10,450,000
Costs		
Basic salaries	5,000,000	5,000,000
Bonus		147,000
Operating expenses	2,800,000	3,100,000
Total costs	7,800,000	8,247,000
Net profit	1,960,000	2,203,000

Question 6

(a) **Should the company replace Green with Brace?**

Budgeted profit for year ending 31 December Year 7 assuming Green is manufactured and sold.

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
	₦000	₦000	₦000	₦000	₦000
Sales revenue	1,400	1,260	1,134	1,021	4,815
Therefore:					
Contribution	40% × Sales revenue				1,926
Fixed costs	4 quarters × ₦200,000				(800)
Profit					1,126

Budgeted profit for year ending 31 December Year 7 assuming Brace is manufactured and sold.

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total (units)
Sales units	86,000	92,000	98,000	104,000	380,000
Therefore:					
Contribution	380,000 units × ₦6				2,280
Fixed cost	4 quarters × ₦240,000				(960)
Profit					1,320

Therefore, the company should make and sell Brace instead of Green.

(b) **Replacement date**

Profit for the year if the replacement is at each of the dates is a s follows:

	Replace at 1 January	Replace at 1 July
	₦	₦
Profits in the year (W1)	1,320,000	1,396,000
Sale of machinery	140,000	30,000
Redundancy costs	(40,000)	(50,000)
Wage savings	100,000	50,000
Incremental profits	1,520,000	1,426,000

Conclusion

The company should discontinue making and selling Greens and introduce the new product on 1 January Year 7.

Working 1: Profit for the year if Brace replaced Green on 1 July

	₦000
Contribution:	
Q1 and Q2 (40% of (1,400,000 + 1,260,000))	1,064
Q3 and Q4 (₦6 × (98,000 + 104,000))	1,212
	2,276
Fixed costs	
Q1 and Q2 (2 × ₦200,000)	400
Q3 and Q4 (2 × ₦240,000)	480
Less: Fixed costs	(880)
Profit	1,396

Explanation of figures

Profits. The profit is included in each option. This will include incremental contribution and incremental fixed costs which are relevant in this situation.

Sale of machinery. The net realisable value of the machinery is relevant here as this is what the machinery could be sold for. Written down value are sunk costs.

Redundancy and wage savings. Early changeover leads to lower redundancy payments and higher wage savings.

Alternative solution: Relevant costs and revenues

Step 1:
Compare replacing at 1 January to continuing to make Greens (as in part a)

Using total profit figures for the year from (a) the extra profit if replacement occurs at 1 January = ₦1,320,000 – ₦1,126,000 = ₦194,000.

Therefore the decision was to replace at 1 January rather than continue making and selling Greens.

Step 2:
Compare replacing at 1 July (i.e. make greens in first two quarters and then make Braces) to making Greens for the whole year.

Replacing at 1 July the profit for the first 6 months will be the same under both options.

For the second two quarters the profit selling Green would be as follows:

	₦000
Sales revenue: 1,134 + 1,021, from the answer to (a)	2,155
Contribution (sales × 40%)	862
Less: Fixed costs	(400)
Profit	462

From selling Brace profit would be:

	₦000
Contribution (98,000 + 104,000) × ₦6	1,212
Less: Fixed costs	(480)
Profit	732

Incremental profit from selling Brace, in ₦000: = 732 – 462 = 270.

Step 3:
Compare the results from steps 1 and 2 and choose the best.

	Replace at 1 January	Replace at 1 July	Incremental revenues and costs
	₦	₦	₦
Extra profits in the year (W2)	194,000	270,000	(76,000)
Sale of machinery	140,000	30,000	110,000
Redundancy costs	(40,000)	(50,000)	10,000
Wage savings	100,000	50,000	50,000
Incremental profits	394,000	300,000	94,000

Conclusion

The company should discontinue making and selling Greens and introduce the new product from 1 January Year 7 rather than 1 July year 7.

Explanation of figures

Profits. The incremental profit is included in each option. This will include incremental contribution and incremental fixed costs which are relevant in this situation.

Conclusion

On a relevant cost basis it is best to introduce the new product on 1 January Year 7.

(c) **Indicators**

The following are indicators which could be used to ascertain the degree of success of the major information systems change:

Productivity

Radical changes to work practices and substantial productivity gains can result from Business Process Re-Engineering (BPR). Staff savings in the order experienced by Easy Ltd are not uncommon outcomes of such changes; a reduced and more adaptive workforce provides the organisation with the ability to respond more effectively to the requirements of the customer.

Mainly industry standards would be used as performance indicators to measure productivity. It is particularly useful to be able to compare the position prior to and after the information systems changes.

Our management control system will also monitor the level of achievement of organisational targets, in terms of output, productivity, etc.; the regular management reports will include key indicators.

Financial indicators

The traditional project evaluation techniques (discounted cash flow NPVs, IRRs, payback period) are a useful indicator of the financial success of a project.

Financial benefits which can be attributed to the IT system - reduction in staffing/increased output/reduction in working capital due to new stock control system - can be offset against the initial costs of an IT project.

These indicators can be used in a situation where the benefits are quantifiable. It should be noted that, due to the speed with which IT systems become obsolete, many organisations seek a very short payback period.

To establish if Easy Ltd have been successful in achieving their target of an NPV of ₦8 million, it will be necessary to conduct a post audit on the appropriate costs and benefits.

Project management indicators also provide a useful means of measuring the success of the project: was the project finished in time, within budget and to the standard of quality specified.

Critical success factors (CSFs)

There are circumstances where the benefits of a project are not easily quantifiable, or where the benefits will be generated by future projects using the infrastructure created by the project in question. In these instances, the success criteria need to be explicit, and will usually be stated as project objectives in the project documentation. Success can be measured by comparison with stated objectives.

IT system developments may also be necessary due to consumer pressure or obligations under statute. Again, the stated project objectives would be used as a basis for measuring success.

Competitive advantage

Major information systems change can result in obtaining competitive advantage. Improved revenue or an increase in market share may be attributed to this, but the actual effect can be difficult to measure. The differing timescales contribute towards the problem: major systems changes involve strategic decisions which generally embrace a long-term view whereas IT investment, due to the tendency towards early obsolescence, leans towards the short-term.

Some of these problems can be surmounted by conducting an information strategy planning (ISP) exercise. An ISP exercise will encompass all the information systems management of Easy Ltd, providing global policies and guidelines, establishing a framework for development over time, and incorporating critical success factors to facilitate monitoring. This will ensure that all projects and systems development will comply with the specified strategic criteria.

Business change

As competition has increased and domestic and overseas markets have opened up, it has become increasingly important for organisations to be able to respond quickly to change. Business processes, by necessity, have become more flexible and adaptable, having implications for the support systems.

Investment in IT may be required, not necessarily to create a market lead, but simply to keep up with the competition and thus retain their market share.

The competitive advantage measures described above can also be applied to market share, revenue and profitability. Assuming good results are being obtained from investment in IT, then organisational objectives may be maintained by retaining IT expenditure as a percentage of revenue.

The success to manage change is affected by the effectiveness of the systems; a system unable to respond with sufficient speed will contribute towards a decline in sales and/or an increase in costs. Standard accounting ratios (ROCE/profitability, etc.) will reflect the success or otherwise of a system and its contribution towards the organisation's ability to manage change.

(You would only need to mention two of the above).