

Fundamentals Level – Skills Module

# Performance Management

Wednesday 7 September 2016



**Time allowed:** 3 hours 15 minutes

This question paper is divided into three sections:

Section A – ALL 15 questions are compulsory and **MUST** be attempted

Section B – ALL 15 questions are compulsory and **MUST** be attempted

Section C – BOTH questions are compulsory and **MUST** be attempted

**Formulae Sheet is on page 18.**

**Do NOT open this question paper until instructed by the supervisor.**

**Do NOT record any of your answers on the question paper.**

**This question paper must not be removed from the examination hall.**

Think Ahead

**ACCA**

F5  
F5  
Paper

The Association of  
Chartered Certified  
Accountants

**Section A – ALL 15 questions are compulsory and MUST be attempted**

Please use the grid provided on page two of the Candidate Answer Booklet to record your answers to each multiple choice question. Do not write out the answers to the MCQs on the lined pages of the answer booklet.

Each question is worth 2 marks.

- 1 A manufacturing company which produces a range of products has developed a budget for the life-cycle of a new product, P. The information in the following table relates exclusively to product P:

	Lifetime total	Per unit
Design costs	\$800,000	
Direct manufacturing costs		\$20
Depreciation costs	\$500,000	
Decommissioning costs	\$20,000	
Machine hours		4
Production and sales units	300,000	

The company's total fixed production overheads are budgeted to be \$72 million each year and total machine hours are budgeted to be 96 million hours. The company absorbs overheads on a machine hour basis.

**What is the budgeted life-cycle cost per unit for product P?**

- A \$24.40
  - B \$25.73
  - C \$27.40
  - D \$22.73
- 2 A company makes and sells product X and product Y. Twice as many units of product Y are made and sold as that of product X. Each unit of product X makes a contribution of \$10 and each unit of product Y makes a contribution of \$4. Fixed costs are \$90,000.

**What is the total number of units which must be made and sold to make a profit of \$45,000?**

- A 7,500
  - B 22,500
  - C 15,000
  - D 16,875
- 3 Product GX consists of a mix of three materials, J, K and L. The standard material cost of a unit of GX is as follows:

		\$
Material J	5 kg at \$4 per kg	20
Material K	2 kg at \$12 per kg	24
Material L	3 kg at \$8 per kg	24

During March, 3,000 units of GX were produced, and actual usage was:

Material J	13,200 kg
Material K	6,500 kg
Material L	9,300 kg

**What was the materials yield variance for March?**

- A \$6,800 favourable
- B \$6,800 adverse
- C \$1,000 favourable
- D \$1,000 adverse

4 A manufacturer and retailer of kitchens introduces an enterprise resource planning system.

**Which of the following is NOT likely to be a potential benefit of introducing this system?**

- A Schedules of labour are prepared for manufacturing
- B Inventory records are updated automatically
- C Sales are recorded into the financial ledgers
- D Critical strategic information can be summarised

5 Different management accounting techniques can be used to account for environmental costs.

One of these techniques involves analysing costs under three distinct categories: material, system, and delivery and disposal.

**What is this technique known as?**

- A Activity-based costing
- B Life-cycle costing
- C Input-output analysis
- D Flow cost accounting

6 A government is trying to assess schools by using a range of financial and non-financial factors. One of the chosen methods is the percentage of students passing five exams or more.

**Which of the three Es in the value for money framework is being measured here?**

- A Economy
- B Efficiency
- C Effectiveness
- D Expertise

7 **Which of the following techniques is NOT relevant to target costing?**

- A Value analysis
- B Variance analysis
- C Functional analysis
- D Activity analysis

8 A government department generates information which should not be disclosed to anyone who works outside of the department. There are many other government departments working within the same building.

**Which of the following would NOT be an effective control procedure for the generation and distribution of the information within the government department?**

- A If working from home, departmental employees must use a memory stick to transfer data, as laptop computers are not allowed to leave the department
- B All departmental employees must enter non-disclosed and regularly updated passwords to access their computers
- C All authorised employees must swipe an officially issued, personal identity card at the entrance to the department before they can gain access
- D All hard copies of confidential information must be shredded at the end of each day or locked overnight in a safe if needed again

9 A jewellery company makes rings (R) and necklaces (N).

The resources available to the company have been analysed and two constraints have been identified:

$$\begin{array}{ll} \text{Labour time} & 3R + 2N \leq 2,400 \text{ hours} \\ \text{Machine time} & 0.5R + 0.4N \leq 410 \text{ hours} \end{array}$$

The management accountant has used linear programming to determine that  $R = 500$  and  $N = 400$ .

**Which of the following is/are slack resources?**

- (1) Labour time available
- (2) Machine time available

- A 1 only
- B 2 only
- C Both 1 and 2
- D Neither 1 nor 2

10 At the end of 20X1, an investment centre has net assets of \$1m and annual operating profits of \$190,000. However, the bookkeeper forgot to account for the following:

A machine with a net book value of \$40,000 was sold at the start of the year for \$50,000 and replaced with a machine costing \$250,000. Both the purchase and sale are cash transactions. No depreciation is charged in the year of purchase or disposal. The investment centre calculates return on investment (ROI) based on closing net assets.

**Assuming no other changes to profit or net assets, what is the return on investment (ROI) for the year?**

- A 18.8%
- B 19.8%
- C 15.1%
- D 15.9%

11 A manufacturing company uses three processes to make its two products, X and Y. The time available on the three processes is reduced because of the need for preventative maintenance and rest breaks.

The table below details the process times per product and daily time available:

Process	Hours available per day	Hours required to make one unit of product X	Hours required to make one unit of product Y
1	22	1.00	0.75
2	22	0.75	1.00
3	18	1.00	0.50

Daily demand for product X and product Y is 10 units and 16 units respectively.

**Which of the following will improve throughput?**

- A Increasing the efficiency of the maintenance routine for Process 2
- B Increasing the demand for both products
- C Reducing the time taken for rest breaks on Process 3
- D Reducing the time product X requires for Process 1

- 12** PlasBas Co uses recycled plastic to manufacture shopping baskets for local retailers. The standard price of the recycled plastic is \$0.50 per kg and standard usage of recycled plastic is 0.2 kg for each basket. The budgeted production was 80,000 baskets.

Due to recent government incentives to encourage recycling, the standard price of recycled plastic was expected to reduce to \$0.40 per kg. The actual price paid by the company was \$0.42 per kg and 100,000 baskets were manufactured using 20,000 kg of recycled plastic.

**What is the materials operational price variance?**

- A** \$2,000 favourable  
**B** \$1,600 favourable  
**C** \$400 adverse  
**D** \$320 adverse
- 13** A profit centre manager claims that the poor performance of her division is entirely due to factors outside her control. She has submitted the following table along with notes from a market expert, which she believes explains the cause of the poor performance:

Category	Budget this year	Actual this year	Actual last year	Market expert notes
Sales volume (units)	500	300	400	The entire market has decreased by 25% compared to last year. The product will be obsolete in four years
Sales revenue	\$50,000	\$28,500	\$40,000	Rivalry in the market saw selling prices fall by 10%
Total material cost	\$10,000	\$6,500	\$8,000	As demand for the raw materials is decreasing, suppliers lowered their prices by 5%

**After adjusting for the external factors outside the manager's control, in which category/categories is there evidence of poor performance?**

- A** Material cost only  
**B** Sales volume and sales price  
**C** Sales price and material cost  
**D** Sales price only
- 14** Which of the following statements regarding market penetration as a pricing strategy is/are correct?
- (1) It is useful if significant economies of scale can be achieved  
(2) It is useful if demand for a product is highly elastic
- A** 1 only  
**B** 2 only  
**C** Neither 1 nor 2  
**D** Both 1 and 2

**15** A company makes two products using the same type of materials and skilled workers. The following information is available:

	<b>Product A</b>	<b>Product B</b>
Budgeted volume (units)	1,000	2,000
Material per unit (\$)	10	20
Labour per unit (\$)	5	20

Fixed costs relating to material handling amount to \$100,000. The cost driver for these costs is the volume of material purchased.

General fixed costs, absorbed on the basis of labour hours, amount to \$180,000.

**Using activity-based costing, what is the total fixed overhead amount to be absorbed into each unit of product B (to the nearest whole \$)?**

- A** \$113
- B** \$120
- C** \$40
- D** \$105

**(30 marks)**

**This is a blank page.  
Section B begins on page 8.**

**Section B – ALL 15 questions are compulsory and MUST be attempted**

Please use the grid provided on page two of the Candidate Answer Booklet to record your answers to each multiple choice question. Do not write out the answers to the MCQs on the lined pages of the answer booklet.

Each question is worth 2 marks.

The following scenario relates to questions 16–20.

Mylo runs a cafeteria situated on the ground floor of a large corporate office block. Each of the five floors of the building are occupied and there are in total 1,240 employees.

Mylo sells lunches and snacks in the cafeteria. The lunch menu is freshly prepared each morning and Mylo has to decide how many meals to make each day. As the office block is located in the city centre, there are several other places situated around the building where staff can buy their lunch, so the level of demand for lunches in the cafeteria is uncertain.

Mylo has analysed daily sales over the previous six months and established four possible demand levels and their associated probabilities. He has produced the following payoff table to show the daily profits which could be earned from the lunch sales in the cafeteria:

Demand level	Probability	Supply level			
		450	620	775	960
		\$	\$	\$	\$
450	0.15	1,170	980	810	740
620	0.30	1,170	1,612	1,395	1,290
775	0.40	1,170	1,612	2,015	1,785
960	0.15	1,170	1,612	2,015	2,496

**16 If Mylo adopts a maximin approach to decision-making, which daily supply level will he choose?**

- A 450 lunches
- B 620 lunches
- C 775 lunches
- D 960 lunches

**17 If Mylo adopts a minimax regret approach to decision-making, which daily supply level will he choose?**

- A 450 lunches
- B 620 lunches
- C 775 lunches
- D 960 lunches

**18 Which of the following statements is/are true if Mylo chooses to use expected values to assist in his decision-making regarding the number of lunches to be provided?**

- (1) Mylo would be considered to be taking a defensive and conservative approach to his decision
- (2) Expected values will ignore any variability which could occur across the range of possible outcomes
- (3) Expected values will not take into account the likelihood of the different outcomes occurring
- (4) Expected values can be applied by Mylo as he is evaluating a decision which occurs many times over

- A 1, 2 and 3
- B 2 and 4
- C 1 and 3 only
- D 4 only



19 The human resources department has offered to undertake some research to help Mylo to predict the number of employees who will require lunch in the cafeteria each day. This information will allow Mylo to prepare an accurate number of lunches each day.

**What is the maximum amount which Mylo would be willing to pay for this information (to the nearest whole \$)?**

- A \$191
- B \$359
- C \$478
- D \$175

20 Mylo is now considering investing in a speciality coffee machine. He has estimated the following daily results for the new machine:

	\$
Sales (650 units)	1,300
Variable costs	(845)
	<hr/>
Contribution	455
Incremental fixed costs	(70)
	<hr/>
Profit	385
	<hr/>

**Which of the following statements are true regarding the sensitivity of this investment?**

- (1) The investment is more sensitive to a change in sales volume than sales price
- (2) If variable costs increase by 44% the investment will make a loss
- (3) The investment's sensitivity to incremental fixed costs is 550%
- (4) The margin of safety is 84.6%

- A 1, 2 and 3
- B 2 and 4
- C 1, 3 and 4
- D 3 and 4 only

The following scenario relates to questions 21–25.

Corfe Co is a business which manufactures computer laptop batteries and it has developed a new battery which has a longer usage time than batteries currently available in laptops. The selling price of the battery is forecast to be \$45.

The maximum production capacity of Corfe Co is 262,500 units. The company’s management accountant is currently preparing an annual flexible budget and has collected the following information so far:

Production (units)	185,000	200,000	225,000
	\$	\$	\$
Material costs	740,000	800,000	900,000
Labour costs	1,017,500	1,100,000	1,237,500
Fixed costs	750,000	750,000	750,000

In addition to the above costs, the management accountant estimates that for each increment of 50,000 units produced, one supervisor will need to be employed. A supervisor’s annual salary is \$35,000.

The production manager does not understand why the flexible budgets have been produced as he has always used a fixed budget previously.

**21 Assuming the budgeted figures are correct, what would the flexed total production cost be if production is 80% of maximum capacity?**

- A \$2,735,000
- B \$2,770,000
- C \$2,885,000
- D \$2,920,000

**22** The management accountant has said that a machine maintenance cost was not included in the flexible budget but needs to be taken into account.

The new battery will be manufactured on a machine currently owned by Corfe Co which was previously used for a product which has now been discontinued. The management accountant estimates that every 1,000 units will take 14 hours to produce. The annual machine hours and maintenance costs for the machine for the last four years have been as follows:

	Machine time (hours)	Maintenance costs (\$'000)
Year 1	5,000	850
Year 2	4,400	735
Year 3	4,850	815
Year 4	1,800	450

**What is the estimated maintenance cost if production of the battery is 80% of maximum capacity (to the nearest \$'000)?**

- A \$575,000
- B \$593,000
- C \$500,000
- D \$735,000

**23** In the first month of production of the new battery, actual sales were 18,000 units and the sales revenue achieved was \$702,000. The budgeted sales units were 17,300.

**Based on this information, which of the following statements is true?**

- A** When the budget is flexed, the sales variance will include both the sales volume and sales price variances
- B** When the budget is flexed, the sales variance will only include the sales volume variance
- C** When the budget is flexed, the sales variance will only include the sales price variance
- D** When the budget is flexed, the sales variance will include the sales mix and quantity variances and the sales price variance

**24** Which of the following statements relating to the preparation of a flexible budget for the new battery are true?

- (1) The budget could be time-consuming to produce as splitting out semi-variable costs may not be straightforward
- (2) The range of output over which assumptions about how costs will behave could be difficult to determine
- (3) The flexible budget will give managers more opportunity to include budgetary slack than a fixed budget
- (4) The budget will encourage all activities and their value to the organisation to be reviewed and assessed

- A** 1 and 2 only
- B** 1, 2 and 3
- C** 1 and 4
- D** 2, 3 and 4

**25** The management accountant intends to use a spreadsheet for the flexible budget in order to analyse performance of the new battery.

**Which of the following statements are benefits regarding the use of spreadsheets for budgeting?**

- (1) The user can change input variables and a new version of the budget can be quickly produced
- (2) Errors in a formula can be easily traced and data can be difficult to corrupt in a spreadsheet
- (3) A spreadsheet can take account of qualitative factors to allow decisions to be fully evaluated
- (4) Managers can carry out sensitivity analysis more easily on a budget model which is held in a spreadsheet

- A** 1, 3 and 4
- B** 1, 2 and 4
- C** 1 and 4 only
- D** 2 and 3

The following scenario relates to questions 26–30.

Helot Co develops and sells computer games. It is well known for launching innovative and interactive role-playing games and its new releases are always eagerly anticipated by the gaming community. Customers value the technical excellence of the games and the durability of the product and packaging.

Helot Co has previously used a traditional absorption costing system and full cost plus pricing to cost and price its products. It has recently recruited a new finance director who believes the company would benefit from using target costing. He is keen to try this method on a new game concept called Spartan, which has been recently approved.

After discussion with the board, the finance director undertook some market research to find out customers' opinions on the new game concept and to assess potential new games offered by competitors. The results were used to establish a target selling price of \$45 for Spartan and an estimated total sales volume of 350,000 units. Helot Co wants to achieve a target profit margin of 35%.

The finance director has also begun collecting cost data for the new game and has projected the following:

<b>Production costs per unit</b>	<b>\$</b>
Direct material	3.00
Direct labour	2.50
Direct machining	5.05
Set-up	0.45
Inspection and testing	4.30
<b>Total non-production costs</b>	<b>\$'000</b>
Design (salaries and technology)	2,500
Marketing consultants	1,700
Distribution	1,400

**26 Which of the following statements would the finance director have used to explain to Helot Co's board what the benefits were of adopting a target costing approach so early in the game's life-cycle?**

- (1) Costs will be split into material, system, and delivery and disposal categories for improved cost reduction analysis
- (2) Customer requirements for quality, cost and timescales are more likely to be included in decisions on product development
- (3) Its key concept is based on how to turn material into sales as quickly as possible in order to maximise net cash
- (4) The company will focus on designing out costs prior to production, rather than cost control during live production

- A** 1, 2 and 4  
**B** 2, 3 and 4  
**C** 1 and 3  
**D** 2 and 4 only

**27 What is the forecast cost gap for the new game?**

- A** \$2.05  
**B** \$0.00  
**C** \$13.70  
**D** \$29.25

**28** The board of Helot Co has asked the finance director to explain what activities can be undertaken to close a cost gap on its computer games.

**Which of the following would be appropriate ways for Helot Co to close a cost gap?**

- (1) Buy cheaper, lower grade plastic for the game discs and cases
- (2) Using standard components wherever possible in production
- (3) Employ more trainee game designers on lower salaries
- (4) Use the company's own online gaming websites for marketing

- A** 1, 2 and 3
- B** 1, 3 and 4
- C** 2 and 4
- D** 2 and 3 only

**29** The direct labour cost per unit has been based on an expected learning rate of 90% but now the finance director has realised that a 95% learning rate should be applied.

**Which of the following statements is true?**

- A** The target cost will decrease and the cost gap will increase
- B** The target cost will increase and the cost gap will decrease
- C** The target cost will remain the same and the cost gap will increase
- D** The target cost will remain the same and the cost gap will decrease

**30** Helot Co is thinking about expanding its business and introducing a new computer repair service for customers. The board has asked if target costing could be applied to this service.

**Which of the following statements regarding services and the use of target costing within the service sector is true?**

- A** The purchase of a service transfers ownership to the customer
- B** Labour resource usage is high in services relative to material requirements
- C** A standard service cannot be produced and so target costing cannot be used
- D** Service characteristics include uniformity, perishability and intangibility

**(30 marks)**

**Section C – Both questions are compulsory and MUST be attempted**

Please write your answers to all parts of these questions on the lined pages within the Candidate Answer Booklet.

**31** Jungle Co is a very successful multinational retail company. It has been selling a large range of household and electronic goods for some years. One year ago, it began using new suppliers from the country of Slabak, where labour is very cheap, for many of its household goods. In 20X4, Jungle Co also became a major provider of ‘cloud computing’ services, investing heavily in cloud technology. These services provide customers with a way of storing and accessing data and programs over the internet rather than on their computers’ hard drives.

All Jungle Co customers have the option to sign up for the company’s ‘Gold’ membership service, which provides next day delivery on all orders, in return for an annual service fee of \$40. In September 20X5, Jungle Co formed its own logistics company and took over the delivery of all of its parcels, instead of using the services of international delivery companies.

Over the last year, there has been worldwide growth in the electronic goods market of 20%. Average growth rates and gross profit margins for cloud computing service providers have been 50% and 80% respectively in the last year. Jungle Co’s prices have remained stable year on year for all sectors of its business, with price competitiveness being crucial to its continuing success as the leading global electronic retailer.

The following information is available for Jungle Co for the last two financial years:

	Notes	31 August 20X6 \$'000	31 August 20X5 \$'000
Revenue	1	94,660	82,320
Cost of sales	2	(54,531)	(51,708)
Gross profit		40,129	30,612
Administration expenses	3	(2,760)	(1,720)
Distribution expenses		(13,420)	(13,180)
Other operating expenses		(140)	(110)
Net profit		23,809	15,602

**Notes**

**1. Breakdown of revenue**

	31 August 20X6 \$'000	31 August 20X5 \$'000
Household goods	38,990	41,160
Electronic goods	41,870	32,640
Cloud computing services	12,400	6,520
Gold membership fees	1,400	2,000
	94,660	82,320

**2. Breakdown of cost of sales**

	31 August 20X6 \$'000	31 August 20X5 \$'000
Household goods	23,394	28,812
Electronic goods	26,797	21,216
Cloud computing services	4,240	1,580
Gold membership fees	100	100
	54,531	51,708

**3. Administration expenses**

Included in these costs are the costs of running the customer service department (\$860,000 in 20X5; \$1,900,000 in 20X6.) This department deals with customer complaints.

**4. Non-financial data**

	<b>31 August 20X6</b>	<b>31 August 20X5</b>
Percentage of orders delivered on time	74%	92%
No. of customer complaints	1,400,000	320,000
No. of customers	7,100,000	6,500,000
Percentage of late 'Gold' member deliveries	14.00%	2.00%

**Required:**

**Discuss the financial and non-financial performance of Jungle Co for the year ending 31 August 20X6.**

Note: There are 7 marks available for calculations and 13 marks available for discussion.

**(20 marks)**

**32** CSC Co is a health food company producing and selling three types of high-energy products: cakes, shakes and cookies, to gyms and health food shops. Shakes are the newest of the three products and were first launched three months ago. Each of the three products has two special ingredients, sourced from a remote part the world. The first of these, Singa, is a super-energising rare type of caffeine. The second, Betta, is derived from an unusual plant believed to have miraculous health benefits.

CSC Co's projected manufacture costs and selling prices for the three products are as follows:

	<b>Cakes</b>	<b>Cookies</b>	<b>Shakes</b>
<b>Per unit</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
Selling price	5.40	4.90	6.00
Costs:			
Ingredients: Singa (\$1.20 per gram)	0.30	0.60	1.20
Ingredients: Betta (\$1.50 per gram)	0.75	0.30	1.50
Other ingredients	0.25	0.45	0.90
Labour (\$10 per hour)	1.00	1.20	0.80
Variable overheads	0.50	0.60	0.40
Contribution	<u>2.60</u>	<u>1.75</u>	<u>1.20</u>

For each of the three products, the expected demand for the next month is 11,200 cakes, 9,800 cookies and 2,500 shakes.

The total fixed costs for the next month are \$3,000.

CSC Co has just found out that the supply of Betta is going to be limited to 12,000 grams next month. Prior to this, CSC Co had signed a contract with a leading chain of gyms, Encompass Health, to supply it with 5,000 shakes each month, at a discounted price of \$5.80 per shake, starting immediately. The order for the 5,000 shakes is not included in the expected demand levels above.

**Required:**

**(a) Assuming that CSC Co keeps to its agreement with Encompass Health, calculate the shortage of Betta, the resulting optimum production plan and the total profit for next month.** (6 marks)

One month later, the supply of Betta is still limited and CSC Co is considering whether it should breach its contract with Encompass Health so that it can optimise its profits.

**Required:**

**(b) Discuss whether CSC Co should breach the agreement with Encompass Health.**

**Note: No further calculations are required.** (4 marks)

Several months later, the demand for both cakes and cookies has increased significantly to 20,000 and 15,000 units per month respectively. However, CSC Co has lost the contract with Encompass Health and, after suffering from further shortages of supply of Betta, Singa and of its labour force, CSC Co has decided to stop making shakes at all. CSC Co now needs to use linear programming to work out the optimum production plan for cakes and cookies for the coming month. The variable 'x' is being used to represent cakes and the variable 'y' to represent cookies.



The following constraints have been formulated and a graph representing the new production problem has been drawn:

Singa:  $0.25x + 0.5y \leq 12,000$

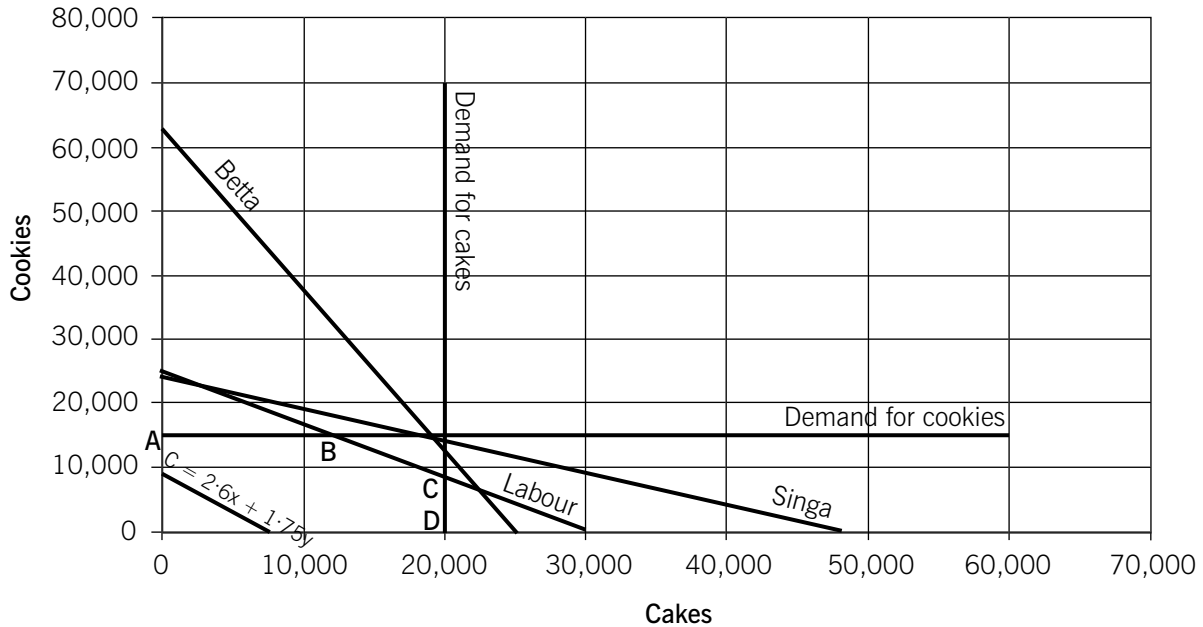
Betta:  $0.5x + 0.2y \leq 12,500$

Labour:  $0.1x + 0.12y \leq 3,000$

$x \leq 20,000$

$y \leq 15,000$

$x, y \geq 0$



Required:

- (c) (i) Explain what the line labelled ' $C = 2.6x + 1.75y$ ' on the graph is and what the area represented by the points **OABCD** means. (4 marks)
- (ii) Explain how the optimum production plan will be found using the line labelled ' $C = 2.6x + 1.75y$ ' and identify the optimum point from the graph. (2 marks)
- (iii) Explain what a slack value is and identify, from the graph, where slack will occur as a result of the optimum production plan. (4 marks)

Note: No calculations are needed for part (c).

(20 marks)

## Formulae Sheet

### Learning curve

$$Y = ax^b$$

Where Y = cumulative average time per unit to produce x units

a = the time taken for the first unit of output

x = the cumulative number of units produced

b = the index of learning ( $\log LR / \log 2$ )

LR = the learning rate as a decimal

### Demand curve

$$P = a - bQ$$

$$b = \frac{\text{change in price}}{\text{change in quantity}}$$

a = price when Q = 0

$$MR = a - 2bQ$$

**End of Question Paper**