Fundamentals Level – Skills Module

Performance Management

Monday 1 June 2015

Paper F5

Time allowed
Reading and planning: 15 minutes
Writing: 3 hours

This paper is divided into two sections:

Section A – ALL 20 questions are compulsory and MUST be attempted

Section B – ALL FIVE questions are compulsory and MUST be attempted

Formulae Sheet is on page 13.

Do NOT open this paper until instructed by the supervisor.

During reading and planning time only the question paper may be annotated. You must NOT write in your answer booklet until instructed by the supervisor.

Do NOT record any of your answers on the exam paper.

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

The Association of Chartered Certified Accountants

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Section A – ALL 20 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 division is considering investing in capital equipment costing $2·7m. The useful economic life of the equipment is expected to be 50 years, with no resale value at the end of the period. The forecast return on the initial investment is 15% per annum before depreciation. The division's cost of capital is 7%.

   What is the expected annual residual income of the initial investment?

   A $0
   B   ($270,000)
   C $162,000
   D $216,000

2   The Fruit Company (F Co) currently grows fruit which customers pick themselves from the fields before paying. F Co is concerned that a large number of customers are eating some of the fruit whilst picking it and are therefore not paying for all of it. As a result, it has to decide whether to hire staff to pick and package the fruit instead. The following values and costs have been identified:

   (i)   The total sales value of the fruit currently picked and paid for by customers
   (ii) The cost of growing the fruit
   (iii) The cost of hiring staff to pick and package the fruit
   (iv) The total sales value of the fruit if it is picked and packaged by staff instead

   Which of the above are relevant to the decision?

   A   All of the above
   B   (ii), (iii) and (iv) only
   C   (i), (ii) and (iv) only
   D   (i), (iii) and (iv) only

3   **Which of the following statements describes target costing?**
   A   It calculates the expected cost of a product and then adds a margin to it to arrive at the target selling price
   B   It allocates overhead costs to products by collecting the costs into pools and sharing them out according to each product's usage of the cost driving activity
   C   It identifies the market price of a product and then subtracts a desired profit margin to arrive at the target cost
   D   It identifies different markets for a product and then sells that same product at different prices in each market

4 The Mobile Sandwich Co prepares sandwiches which it delivers and sells to employees at local businesses each day. Demand varies between 325 and 400 sandwiches each day. As the day progresses, the price of the sandwiches is reduced and, at the end of the day, any sandwiches not sold are thrown away. The company has prepared a regret table to show the amount of profit which would be foregone each day at each supply level, given the varying daily levels of demand.

Regret table

		Daily **supply** of sandwiches (units)		
		325	350	375	400
	325	$0	$21	$82	$120
Daily **demand**	350	$36	$0	$44	$78
for sandwiches (units)	375	$82	$40	$0	$34
	400	$142	$90	$52	$0

Applying the decision criterion of minimax regret, how many sandwiches should the company decide to supply each day?

A   325
B   350
C   375
D   400

5 The following statements have been made about transaction processing systems and executive information systems:

(i)   A transaction processing system collects and records the transactions of an organisation
(ii) An executive information system is a way of integrating the data from all operations within the organisation into a single system

Which of the above statements is/are true?

A   (i) only
B   (ii) only
C   Both (i) and (ii)
D   Neither (i) nor (ii)

6 The following information is available for a manufacturing company which produces multiple products:

(i)   The product mix ratio
(ii)   Contribution to sales ratio for each product
(iii) General fixed costs
(iv)   Method of apportioning general fixed costs

Which of the above are required in order to calculate the break-even sales revenue for the company?

A   All of the above
B   (i), (ii) and (iii) only
C   (i), (iii) and (iv) only
D   (ii) and (iii) only

7 **Which of the following is an external source of information?**

A   Value of sales, analysed for each customer
B   Value of purchases, analysed for each supplier
C   Prices of similar products, analysed for each competitor company
D   Hours worked, analysed for each employee

[P.T.O.

8 C Co uses material B, which has a current market price of $0·80 per kg. In a linear program, where the objective is to maximise profit, the shadow price of material B is $2 per kg. The following statements have been made:

(i) Contribution will be increased by $2 for each additional kg of material B purchased at the current market price
(ii) The maximum price which should be paid for an additional kg of material B is $2
(iii) Contribution will be increased by $1·20 for each additional kg of material B purchased at the current market price
(iv) The maximum price which should be paid for an additional kg of material B is $2·80

Which of the above statements is/are correct?

A (ii) only
B (ii) and (iii)
C (i) only
D (i) and (iv)

9 X Co uses a throughput accounting system. Details of product A, per unit, are as follows:

Selling price	$320
Material costs	$80
Conversion costs	$60
Time on bottleneck resource	6 minutes

What is the return per hour for product A?

A $40
B $2,400
C $30
D $1,800

10 The following ratios have been calculated for a company:

Gross profit margin	42%
Operating profit margin	28%
Gearing (debt/equity)	40%
Asset turnover	65%

What is the return on capital employed for the company?

A 27·3%
B 18·2%
C 11·2%
D 16·8%

11 A company manufactures three products using different amounts of the same grade of labour, which is in short supply. The following budgeted data relates to the products:

Per unit:	P1	P2	P3
	$	$	$
Selling price	120	140	95
Materials ($2 per kg)	(40)	(32)	(22)
Labour ($10 per hour)	(10)	(20)	(11)
Variable overheads	(20)	(28)	(24)
Fixed overheads	(6)	(9)	(12)
Profit per unit	44	51	26

What order should the products be manufactured in to ensure that profit is maximised?

	P1	P2	P3
A	2nd	1st	3rd
B	2nd	3rd	1st
C	1st	3rd	2nd
D	1st	2nd	3rd

12 The following statements have been made about life cycle costing:

(i)   It focuses on the short-term by identifying costs at the beginning of a product's life cycle
(ii) It identifies all costs which arise in relation to the product each year and then calculates the product's profitability on an annual basis
(iii) It accumulates a product's costs over its whole life time and works out the overall profitability of a product
(iv) It allocates costs to each stage of a product's life cycle and writes them off at the end of each stage

Which of the above statements is/are correct?

A   (i) and (iii)
B   (iii) only
C   (i) and (iv)
D   (ii) only

13 A company's sales and cost of sales figures have remained unchanged for the last two years. The following information has been noted:

Year ended	31 May 2015	31 May 2014
Inventory turnover period	45 days	38 days
Payables payment period	40 days	35 days
Receivables payment period	60 days	68 days
Current ratio	1·3	1·4
Quick ratio	1·1	1·3

The following statements have been made about the company's performance for the most recent year:

(i)   Customers are taking longer to pay and this may have contributed to the decline in the company's current ratio
(ii) Inventory levels have decreased and this may have contributed to the decline in the company's quick ratio

Which of the above statements is/are true?

A   (i) only
B   (ii) only
C   Both (i) and (ii)
D   Neither (i) nor (ii)

14 Caf Co budgeted to sell 10,000 units of a new product in the period at a budgeted selling price of $5 per unit. Actual sales volumes in the period were as budgeted but the actual sales price achieved was only $4 per unit. This was because a competitor launched a similar product at the same time. Caf Co had been unaware that this was going to happen when it prepared its budget and, had it known this, it would have revised its expected selling price to $3·80 per unit, which was the price of the competitor's product.

What is the sales price planning variance?

A $12,000 A
B $12,000 F
C $2,000 F
D $2,000 A

15 The following budgeted data for a particular period was available for a company selling two products:

	Sales price per unit	Variable cost per unit	Sales volume in units
Product A	$20	$8	15,840
Product B	$24	$11	10,560

The actual results for the period were as follows:

	Sales price per unit	Variable cost per unit	Sales volume in units
Product A	$22	$8	14,200
Product B	$26	$11	12,500

What is the total sales quantity contribution variance for the period?

A $3,720 F
B $3,720 A
C $4,320 F
D $4,320 A

16 A company predicted that the learning rate for production of a new product would be 80%. The actual learning rate was 75%. The following possible reasons were stated for this:

(i)   The number of new employees recruited was lower than expected
(ii) Unexpected problems were encountered with production
(iii) Unexpected changes to Health and Safety laws meant that the company had to increase the number of breaks during production for employees

Which of the above reasons could have caused the difference between the expected rate of learning and the actual rate of learning?

A   All of the above
B   (ii) and (iii) only
C   (i) only
D   None of the above

17 When activity-based costing is used for environmental accounting, which statement is correct for environment-related costs and environment-driven costs?

   A   Environment-related costs can be attributed to joint cost centres and environment-driven costs cannot be
   B   Environment-driven costs can be attributed to joint cost centres and environment-related costs cannot be
   C   Both environment-related costs and environment-driven costs can be attributed to joint cost centres
   D   Neither environment-related costs nor environment-driven costs can be attributed to joint cost centres

18 The following statements have been made about the materials mix variance for a company manufacturing different products using the same type of material (measured in kgs):

   (i)   The mix variance can be calculated by taking the difference between the actual quantity in the standard mix and the actual quantity in the actual mix, then multiplying it by the actual cost per kg
   (ii)   The mix variance arises because there is a difference between what the input should have been for the output achieved and the actual output

Which of the above statements is/are correct?

   A   Neither (i) nor (ii)
   B   Both (i) and (ii)
   C   (i) only
   D   (ii) only

19 At the start of the year, a division has non-current assets of $4 million and makes no additions or disposals during the year. Depreciation is charged at a rate of 10% per annum on all non-current assets held at the end of the year. Working capital is $0·5 million at the start of the year although this is expected to increase by 20% by the end of the year. The budgeted profit of the division after depreciation is $1·2m.

What is the expected ROI of the division for the year, based on average capital employed?

   A   27·59%
   B   26·37%
   C   18·39%
   D   31·58%

20 The following statements have been made in relation to the concepts outlined in throughput accounting:

   (i)   Inventory levels should be kept to a minimum
   (ii)   All machines within a factory should be 100% efficient, with no idle time

Which of the above statements is/are correct?

   A   (i) only
   B   (ii) only
   C   Both (i) and (ii)
   D   Neither (i) nor (ii)

(40 marks)

Section B – ALL FIVE 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.

1 Beckley Hill (BH) is a private hospital carrying out two types of procedures on patients. Each type of procedure incurs the following direct costs:

Procedure	A	B
	$	$
Surgical time and materials	1,200	2,640
Anaesthesia time and materials	800	1,620

BH currently calculates the overhead cost per procedure by taking the total overhead cost and simply dividing it by the number of procedures, then rounding the cost to the nearest 2 decimal places. Using this method, the total cost is $2,475·85 for Procedure A and $4,735·85 for Procedure B.

Recently, another local hospital has implemented activity-based costing (ABC). This has led the finance director at BH to consider whether this alternative costing technique would bring any benefits to BH. He has obtained an analysis of BH's total overheads for the last year and some additional data, all of which is shown below:

Cost	Cost driver	$
Administrative costs	Administrative time per procedure	1,870,160
Nursing costs	Length of patient stay	6,215,616
Catering costs	Number of meals	966,976
General facility costs	Length of patient stay	8,553,600
Total overhead costs		17,606,352

Procedure	A	B
No. of procedures	14,600	22,400
Administrative time per procedure (hours)	1	1·5
Length of patient stay per procedure (hours)	24	48
Average no. of meals required per patient	1	4

Required:

(a) Calculate the full cost per procedure using activity-based costing.   (6 marks)

(b) Making reference to your findings in part (a), advise the finance director as to whether activity-based costing should be implemented at BH.   (4 marks)

(10 marks)

2 Mobe Co manufactures electronic mobility scooters. The company is split into two divisions: the scooter division (Division S) and the motor division (Division M). Division M supplies electronic motors to both Division S and to external customers. The two divisions run as autonomously as possible, subject to the group's current policy that Division M must make internal sales first before selling outside the group; and that Division S must always buy its motors from Division M. However, this company policy, together with the transfer price which Division M charges Division S, is currently under review.

Details of the two divisions are given below.

Division S
Division S's budget for the coming year shows that 35,000 electronic motors will be needed. An external supplier could supply these to Division S for $800 each.

Division M
Division M has the capacity to produce a total of 60,000 electronic motors per year. Details of Division M's budget, which has just been prepared for the forthcoming year, are as follows:

Budgeted sales volume (units)	60,000
Selling price per unit for external sales of motors	$850
Variable costs per unit for external sales of motors	$770

The variable cost per unit for motors sold to Division S is $30 per unit lower due to cost savings on distribution and packaging.

Maximum external demand for the motors is 30,000 units per year.

Required:

Assuming that the group's current policy could be changed, advise, using suitable calculations, the number of motors which Division M should supply to Division S in order to maximise group profits. Recommend the transfer price or prices at which these internal sales should take place.

Note: All relevant workings must be shown.

(10 marks)

3 Bokco is a manufacturing company. It has a small permanent workforce but it is also reliant on temporary workers, whom it hires on three-month contracts whenever production requirements increase. All buying of materials is the responsibility of the company's purchasing department and the company's policy is to hold low levels of raw materials in order to minimise inventory holding costs. Bokco uses cost plus pricing to set the selling prices for its products once an initial cost card has been drawn up. Prices are then reviewed on a quarterly basis. Detailed variance reports are produced each month for sales, material costs and labour costs. Departmental managers are then paid a monthly bonus depending on the performance of their department.

One month ago, Bokco began production of a new product. The standard cost card for one unit was drawn up to include a cost of $84 for labour, based on seven hours of labour at $12 per hour. Actual output of the product during the first month of production was 460 units and the actual time taken to manufacture the product totalled 1,860 hours at a total cost of $26,040.

After being presented with some initial variance calculations, the production manager has realised that the standard time per unit of seven hours was the time taken to produce the first unit and that a learning rate of 90% should have been anticipated for the first 1,000 units of production. He has consequently been criticised by other departmental managers who have said that, 'He has no idea of all the problems this has caused.'

Required:

(a) Calculate the labour efficiency planning variance and the labour efficiency operational variance AFTER taking account of the learning effect.

Note: The learning index for a 90% learning curve is –0·1520 (5 marks)

(b) Discuss the likely consequences arising from the production manager's failure to take into account the learning effect before production commenced. (5 marks)

(10 marks)

4 ALG Co is launching a new, innovative product onto the market and is trying to decide on the right launch price for the product. The product's expected life is three years. Given the high level of costs which have been incurred in developing the product, ALG Co wants to ensure that it sets its price at the right level and has therefore consulted a market research company to help it do this. The research, which relates to similar but not identical products launched by other companies, has revealed that at a price of $60, annual demand would be expected to be 250,000 units. However, for every $2 increase in selling price, demand would be expected to fall by 2,000 units and for every $2 decrease in selling price, demand would be expected to increase by 2,000 units.

A forecast of the annual production costs which would be incurred by ALG Co in relation to the new product are as follows:

Annual production (units)	200,000	250,000	300,000	350,000
	$	$	$	$
Direct material	2,400,000	3,000,000	3,600,000	4,200,000
Direct labour	1,200,000	1,500,000	1,800,000	2,100,000
Overheads	1,400,000	1,550,000	1,700,000	1,850,000

Required:

(a) Calculate the total variable cost per unit and total fixed overheads. (3 marks)

(b) Calculate the optimum (profit maximising) selling price for the new product AND calculate the resulting profit for the period.

Note: If P = a – bx then MR = a – 2bx. (7 marks)

(c) The sales director is unconvinced that the sales price calculated in (b) above is the right one to charge on the initial launch of the product. He believes that a high price should be charged at launch so that those customers prepared to pay a higher price for the product can be 'skimmed off' first.

Required:

Discuss the conditions which would make market skimming a more suitable pricing strategy for ALG, and recommend whether ALG should adopt this approach instead. (5 marks)

(15 marks)

5 Lesting Regional Authority (LRA) is responsible for the provision of a wide range of services in the Lesting region, which is based in the south of the country 'Alaia'. These services include, amongst other things, responsibility for residents' welfare, schools, housing, hospitals, roads and waste management.

Over recent months the Lesting region experienced the hottest temperatures on record, resulting in several forest fires, which caused damage to several schools and some local roads. Unfortunately, these hot temperatures were then followed by flooding, which left a number of residents without homes and saw higher than usual numbers of admissions to hospitals due to the outbreak of disease. These hospitals were full and some patients were treated in tents. Residents have been complaining for some years that a new hospital is needed in the area.

Prior to these events, the LRA was proudly leading the way in a new approach to waste management, with the introduction of its new 'Waste Recycling Scheme.' Two years ago, it began phase 1 of the scheme and half of its residents were issued with different coloured waste bins for different types of waste. The final phase was due to begin in one month's time. The cost of providing the new waste bins is significant but LRA's focus has always been on the long-term savings both to the environment and in terms of reduced waste disposal costs.

The LRA is about to begin preparing its budget for the coming financial year, which starts in one month's time. Over recent years, zero-based budgeting (ZBB) has been introduced at a number of regional authorities in Alaia and, given the demand on resources which LRA faces this year, it is considering whether now would be a good time to introduce it.

Required:

(a) Describe the main steps involved in preparing a zero-based budget. (3 marks)

(b) Discuss the problems which the Lesting Regional Authority (LRA) may encounter if it decides to introduce and use ZBB to prepare its budget for the coming financial year. (9 marks)

(c) Outline THREE potential benefits of introducing zero-based budgeting at the LRA. (3 marks)

(15 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/log2)

LR = the learning rate as a decimal

Demand curve

$P = a - bQ$

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

a = price when Q = 0

$MR = a - 2bQ$

End of Question Paper