Performance Management

December 2014

Paper F5

Time allowed

Reading and planning: 15 minutes

Writing: 3 hours

This paper is divided into two sections:

Section A -   ALL TWENTY questions are compulsory and MUST be attempted.

Section B -   ALL FIVE questions are compulsory and MUST be attempted.

The formulae are on page 3.

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.

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

FORMULAE

Learning curve

$Y = ax^b$

Where y = cumulative average time per unit to produce × 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

$MR = a - 2bQ$

SECTION A

ALL TWENTY questions are compulsory and must be attempted

Each question is worth 2 marks

(This scenario is to be used for questions 1 and 2)

Bean Products Ltd manufactures two types of Beanbags - Standard and Deluxe. Both beanbags are produced on the same equipment and use similar processes. The following budget data has been obtained for the year ended 31 December 2013:

Product	Standard	Deluxe
Production Quantity	25,000	2,500
Number of purchase orders	400	200
Number of setups	150	100
Resources required per unit	**Standard**	**Deluxe**
Direct Material ($)	25	62.5
Direct labour hours	10	10
Machine time (in hours)	5	5

Budgeted production overheads for the year have been analysed as follows:

Volume related overheads	$275,000
Purchases related overheads	$300,000
Set-up related overheads	$525,000

Labour is paid at $20 per hour. The company's present system is to absorb overheads by product units using rates per labour hour. However, the company is considering implementing a system of activity-based costing. An activity-based costing investigation revealed that the cost drivers for the overhead costs are as follows:

Volume related overheads	Machine hours
Purchases related overheads	Number of purchase orders
Set-up related overheads	Number of setups

1 **The unit cost for the Deluxe type of beanbag using the current absorption costing method is:**

2 **The unit cost for the Deluxe type of beanbag using the proposed activity-based costing approach is:**

3 The following statements have been made about lifecycle costing:

(1) A lifecycle costing exercise enables an organisation to appraise the profitability over the whole life of the product rather than a period at a time. Thus, products that are loss making initially, but profitable in the longer term, , will be accepted.

(2) A lifecycle costing exercise enables management to focus marketing and promotion when required, at certain critical points of the life cycle.

Which of the above statements is/are true?

A (1) only

B (2) only

C Neither (1) nor (2)

D Both (1) and (2)

4 The following information relates to product Z:

- Selling price per unit $250
- Sales for 2015 500 units

If the company requires a return of 15% in the coming year on its investment of $250,000 in product Z, the target cost for each unit for the coming year is

A $145

B $155

C $165

D $175

5 You are currently in employment, earning $25,000 per annum. You have decided to go into business for yourself as a freelancer for publishing companies and will operate out of a unit available for rent at the edge of the town you live in.

How should (i) your current salary and (ii) the rent of the unit be treated when deciding whether or not to start your freelancing business?

A (i) as an irrelevant cost and (ii) as an opportunity cost

B (i) as a sunk cost and (ii) as a committed cost

C (i) as an incremental cost and (ii) as an opportunity cost

D (i) as an opportunity cost and (ii) as an incremental cost

6   DVL plc sells three products.The budgeted fixed costs for the period amount to $592,000. The budgeted contribution to sales ratio (C/S ratio) and sales mix are as follows:

Product	C/S ratio	Mix %
D	27	30
V	56	20
L	38	50

The breakeven revenue is closest to

A $238,576

B $1,467,769

C $1,545,692

D $1,391,109

7
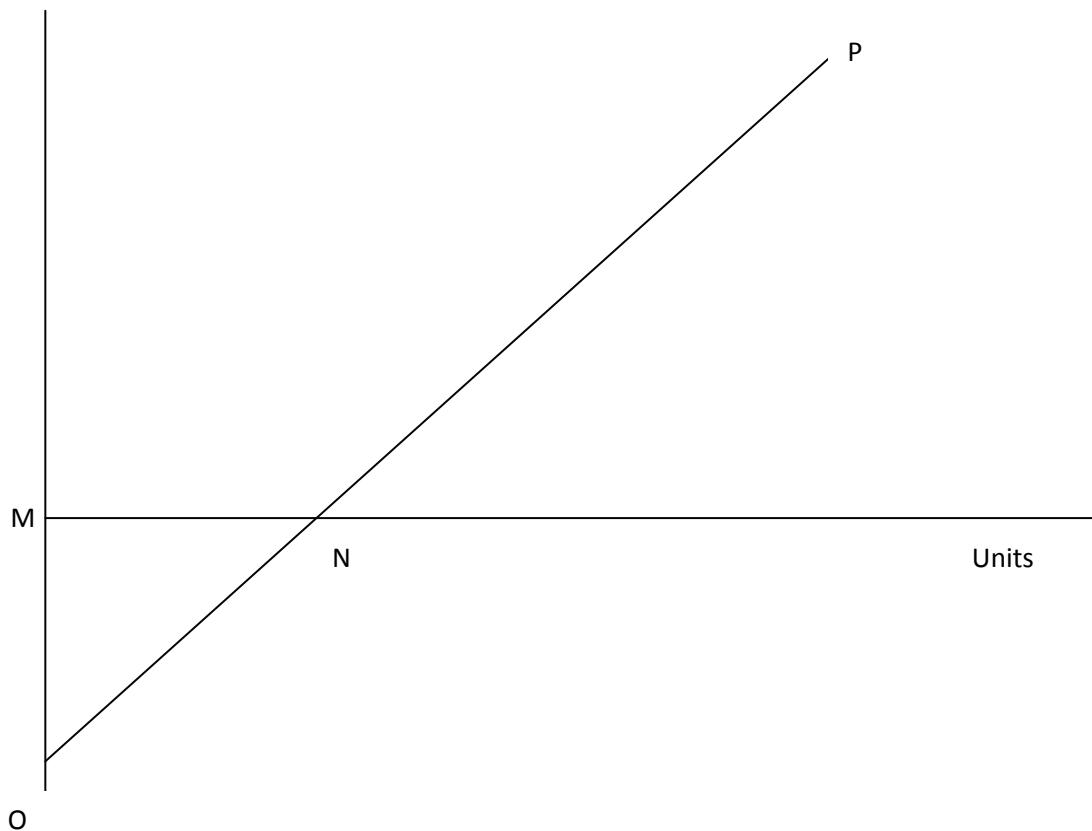
Which of the following statements is/are true?

	Name of graph	*Breakeven point*	*Fixed costs*
A	Breakeven chart	N	M
B	Breakeven chart	M	O
C	Profit/Volume chart	M	P
D	Profit/Volume chart	N	O

8   A company employs skilled technicians, and unskilled labourers. Skilled technicians must be no more of 40% of the total number of persons employed. Skilled technicians are denoted by x and unskilled labourers by y.

Which of the following inequalities express the above constraint?

A $\dfrac{2x}{5}$ $\leq$ $x + y$

B x $\leq$ $\dfrac{2(x+y)}{5}$

C $\dfrac{2x}{5}$ $\leq$ y

D x $\leq$ $\dfrac{2y}{5}$

9   Crantock Ltd produced three joint products 1, 2 and 3, incurring common costs of $750,000.

Each product can be sold immediately as the production process ceases, or sold for a higher price after further processing work has been undertaken. Relevant information is as follows:

Product	Product 1	Product 2	Product 3
Units produced	10,000	6,000	4,000
Selling price at separation point	$9 per unit	$11 per unit	$7 p.u.
Further processing costs	$25,000	$35,000	$20,000
Final selling price	$11 per unit	$17 per unit	$13 p.u.

For which products is it worth the company undertaking further processing?

A   Products 1, 2 and 3

B   Products 1 and 2

C   Products 1 and 3

D   Products 2 and 3

10   The owner of a boat-building company is deciding whether or not to exhibit at a particular boat show. The total cost of exhibiting at the show will be $6,000. Sales will be dependent on the weather. Tehre is a 0.3 chance that the weather will be dry and 0.7 chance that the weather will be wet.

If the weather is dry the owner expects to see six yachts at the show. If the weather is wt he expects to sell only two yachts at the show. The contribution per yacht sold is $10,000.

If the owner does not exhibit at the show, he believes that two of the yachts he expects to sell at this show would be sold at another show later in the year.

What is the expected net gain from exhibiting at the show?

A $0

B $6,000

C $12,000

D $26,000

11 **Fill in the blank in the following paragraph:**

In some situations feedback control is inappropriate in budgetary control. It involves acting 'after the event' to bring the process back to its planned course. This may be costly if things have gone badly wrong. By contrast, ...control works on the basis of forecast results.

12 The following statements have been made about rolling budgets:

(1) The use of rolling budgets has motivational effects, which may induce improved performance.

(2) When a decision has been made to adopt rolling budgets, all the budgets in a system need to be prepared on a rolling basis.

Which of the above statements is/are true?

A   (1) only

B   (2) only

C   Neither (1) nor (2)

D   Both (1) and (2)

13 BB plc has received an order to make eight units of a new product called the Betty Boop. The time to produce the first unit is estimated to be 100 hours, and a 80% learning curve is expected. The rate of pay is $6 for each hour.

The direct materials for each unit is $2,500 and the fixed costs associated with the order are $9,600.

What is the average cost of each unit (to the nearest $) for this order of product Betty Boop?

A $4,007

B $4,180

C $6,158

D $10,160

14 **Which of the following best describes a basic standard?**

A   A standard set at an ideal level, which makes no allowance for normal losses, waste and machine downtime

B   A standard which assumes an efficient level of operation, but which includes allowances for factors such as normal loss, waste and machine downtime

C   A standard which is kept unchanged over a period of time

D   A standard which is based on current price levels

15   A company manufactures a fruit flavoured drink concentrate by mixing two liquids (X and Y). The standard cost card for 10 litres of the drink concentrate is

Liquid X	5 litres @ $16 per litre	$80
Liquid Y	6 litres @ $25 per litre	$150
Total	11 litres	230

The company does not hold any inventory. During the last period the company produced 4,800 litres of the drink concentrate. This was 200 litres below the budgeted output. The company purchased 2,200 litres of X for $18 per litre, and 2,750 litres of Y for $21 per litre.

What was the materials mix variance for the period?

A $150 adverse

B $450 adverse

C $6,480 favourable

D $6,900 favourable

(The following scenario applies to questions 16 and 17)

Maigold Ltd operates a standard absorption costing system. The following information has been extracted from the standard cost card of one of its products:

Budgeted production   1,500 units

Direct Material Cost: 7 kgs × $4.10 = $28.70 per unit

Actual results for the period were as follows:

Production   1,600 units

Direct Material (purchased and used) : 1,200 kgs, cost $52,200

It has subsequently been noted that, due to a change in economic conditions, the best price that the material could have been purchased for was $4.50 per kg during the period.

16   **The material price planning variance is**

17   **The operational material usage variance is**

18   EF plc has 3 divisions – P, Q and R – whose performance is assessed on return on investment (ROI). The ROI for the divisions for the coming year is expected to be 24%, 28% and 23%, respectively. . Three new proposals are now being considered:

(i)   P is considering investing $75,000 in order to increase profit by $21,600 each year.

(ii) Q is considering selling a machine, forecast to earn a profit of $2,500 in the coming year, for its carrying value (NBV) of $7,000.

Which of the following division(s) will REJECT the proposal under consideration because of its effect on ROI?

A   P

B   Q

C   P and Q

D   Neither P nor Q

19   **The following statements have been made about ROI and RI:**

(i)   If a company uses a balanced scorecard approach to the provision of information it will not use ROI or Residual Income as divisional performance measures.

(ii) The Residual Income will always increase when investments earning above the cost of capital are undertaken.

(iii) An advantage of the Residual Income performance measure is that it facilitates comparisons between investment centres.

Which of the above statements is/are true?

A   (i) only

B   (ii) only

C   (i) and (iii) only

D   All of the above

20   The following statements have been made about the meaning of the term 'effectiveness' in a Value For Money approach to performance management:

(1)   Effectiveness means 'ensuring outputs succeed in achieving objectives'

(2)   Effectiveness means 'Getting out as much as possible for what goes in'

Which of the above statements is/are true?

A   (1) only

B   (2) only

C   Both (1) and (2) fit the definition

D   Neither (1) nor (2) fit the definition

SECTION B

ALL FIVE questions are compulsory and MUST be attempted

1   MERTA Ltd is a leading provider of nutritional product mixes targeted at all types of livestock. The Managing Director of Merta has just returned from a conference on 'The Theory of Constraints and Throughput Accounting'. As he is keen to maximise profits and already operates in a strict JIT environment, he has decided to adopt throughput accounting for the business short-term decisions.

The following information is available:

1   The company specialises in three particular meal mixes: Mix A, Mix B and Mix C. Each mix uses the same three key ingredients - although in different quantities: vitamin supplements (Ingredient 'V'), mineral supplements (Ingredient 'M'), and organic acids (Ingredient 'OA').

2   The mixes are produced in batches of 100 units. Costs per batch are as follows:

	Mix A	Mix B	Mix C
Ingredient 'V' ($5 per kg)	$150	$120	$90
Ingredient 'M' ($10 per kg)	$70	$90	$40
Ingredient 'OA' ($15 per kg)	$30	$75	$45
Skilled Labour	$10	$30	$15

3   The price of each of the mixes A, B and C is $340, $450 and $270 respectively.

4   Recruiting skilled food mixers is particularly difficult, but their loyalty to the company is high and staff turnover is nil. Mixing hours have correctly been identified as the bottleneck resource. Only 5,000 hours are available every quarter, and the cost per hour is $10.

5   Other fixed costs (comparable to 'factory costs' in a traditional manufacturing environment) are general overheads, which amount to $224,000 per quarter.

Required:

(a)   Calculate the throughput accounting ratio for each of the three mixes.   (5 marks)

(b)   Merta's production plans for the next three months have been prepared and the estimated maximum demand from customers is forecast as follows:

Mix A	Mix B	Mix C
1,150 batches	1,100 batches	900 batches

These figures include a contract for the delivery of 50 batches of each mix to an important agricultural customer. If this minimum contract is not satisfied, Merta will have to pay a substantial financial penalty for non-delivery, and suffer long-term damage to its reputation as a top-rated supplier to farms.

Required:

Calculate the optimum product mix and the maximum quarterly profit that Merta can achieve.   **(5 marks)**

(Total: 10 marks)

2 MOC makes and sells an executive game for two distinct markets in which it currently has a monopoly. The fixed costs of production per month are $20,000, and variable costs per unit produced, and sold, are $40. The monthly sales can be thought of as X, where X = X1 + X2, with X1 and X2 denoting monthly sales in their respective markets. Detailed market research has revealed the demand functions in the markets to be as follows, with prices shown as P1 and P2:

Market 1: P1 = 55 − 0.05X1 Market 2: P2 = 200 − 0.2X2

The management accountant believes there should be price discrimination; the price is currently $50 per game in either market.

Required:

Analyse the information for the executive game AND, given the management accountant's belief:

(a) **Calculate the price to charge in EACH market, and the quantity to produce (and sell) each month, to maximise profit.** **(5 marks)**

(b) **Calculate the Total Monthly Contribution for EACH market at the price and quantities calculated in part (a) and the maximum monthly profit in TOTAL.**

(4 marks)

(Total: 10 marks)

3 The Green Company (GC) was formed a couple of years ago and has recently won a five-year local government contract to provide waste recycling services in the county of Cleanland. The company recently appointed a new Director to take responsibility for the local government contract. He has worked in various positions in other waste recycling companies for a number of years. He has put together a team of managers by recruiting some of his former colleagues, and some of GC's current managers.

The Director is also aware that GC's account department currently consists of one part-qualified accountant who has a heavy workload, and who prepares GC's budget using spreadsheets.

The local government contract stipulates that the company should prepare detailed budgets for its first year of operations to show how it intends to meet the various operating targets that are stated in the contract. The new Director is undecided about whether he should prepare the budgets himself, or whether he should involve his management team, including the newly recruited managers, in the process.

Required:

(a) **Discuss the risk of using the company accountant's own spreadsheets for budgeting.** **(5 marks)**

(b) **List the potential benefits and the potential disadvantages of involving the new and existing managers in the budget setting process.** **(5 marks)**

(Total: 10 marks)

4 BWealth Ltd provides a fee-based, high quality financial planning and personalised investment service to 'high net worth' retired individuals, as well as to trusts, charities and small businesses.

BWealth employees work to enhance the income of the business' long-term investors. The industry BWealth operates in is becoming more and more competitive. The Managing Partner feels that promotion of new investment products to BWealth's clients would be likely to upset their generally conservative nature and, as a result, the business has been managed with similar products for the last couple of years.

The last two years of financial results are shown below:

	2010	2009
Turnover ($000)	1,001	950
Net profit ($000)	198	190
Average debtor / trade receivables days (industry average 20 days)	19 days	21 days
Average cash balances ($000)	20	19

BWealth operates in a country where the average rate of inflation is around 3% per annum.

Required:

(a) **Assess the financial performance of BWealth using the information given above.**

(5 marks)

During the early part of 2009, BWealth employed a newly qualified management accountant. He quickly became concerned about the potential performance of the business, and to investigate his concerns, he started to gather data to measure some non-financial measures of success. The data he has gathered is shown below:

Internal Business Processes

	2010	2009
Error rates in jobs done	15%	9%
Average job completion time	7 weeks	9 weeks

Customer Knowledge

	2010	2009
Number of customers	1,210	1,432
Average fee levels ($)	549	450
Market Share	12%	19%

Learning and Growth

	2010	2009
Percentage of revenue from non-core work	4%	5%
Industry average of the proportion of revenue from non-core work in similar practices	30%	25%
Employee retention rate.	60%	80%

Notes

1   Error rates measure the number of jobs with mistakes made by staff as a proportion of the number of clients serviced.

2   Core work is defined as being investment management. Non-core work is defined primarily as estate planning and retail banking. Non-core work is traditionally high margin work.

Required:

(b)   Assess the performance of the business with comments on all non-financial aspects separately, as well as a concluding comment on the overall performance of the business.   (10 marks)

(Total: 15 marks)

5   LOIRE ESTATES

Loire Estates produces and sells a number of different types of fine wine. The following standard and actual information is available for September 2013 for one particular type of wine, Sancerre.

	Budget	Actual
Sales and production	3,000	3,600
Material price per kg	$40	$38
Labour price per hour	$30	$33
Kg's of material	5,000	4,500
Labour hours	6,000	7,000

The total materials price variance of $9,000 favourable has been correctly calculated.

Additional information

The actual labour costs and material costs for Sancerre are 10% higher and 5% lower respectively than the original budget. 6% of the labour cost increase from the original standard is due to an underestimation of a wage award. The remaining 4% increase is due to poor short term decision making.

3% of the material cost reduction is due to a fall in general market prices. The remaining 2% is due to short term operational improvements.

Required:

(a)   Calculate the following, showing all workings clearly:

(i)   The material price planning variance and the material price operational variance.   (2 marks)

(ii)   The labour rate planning variance and the labour rate operational variance.   (2 marks)

(b)   The following information is available for September 2013 for the Chenin Blanc, another of Loire Estates' wines.

Standard material for one bottle of wine is as follows:

Material	Amount in kg	Standard cost per kg ($)
Ingredient A	5	0.50
Ingredient B	0.5	1.50

During September 2013 actual production of Chenin Blanc was 4,500 bottles. The actual materials used are as follows:

Material	Amount in kgs	Actual cost per kg ($)
Ingredient A	21,500	0.60
Ingredient B	2,700	1.60

Required:

Calculate the material mix and yield variance for Chenin Blanc for September 2013. Include a brief comment on the two variances calculated.   (6 marks)

(c)   **Discuss the problems that can arise from using standard costs in a rapidly changing environment.   (5 marks)**

(Total: 20 marks)