

# Applied Skills

## Performance Management

### Mock Exam 1 – Questions

**Time allowed:** 3 hours

This examination is divided into three sections:

**Section A**

- 15 objective test (OT) questions, each worth 2 marks
- 30 marks in total

**Section B**

- Three OT cases, containing a scenario which relates to five OT questions, each worth 2 marks
- 30 marks in total

**Section C**

- Two constructed response questions, each containing a scenario which relates to one or more requirement(s)
- Each constructed response question is worth 20 marks in total
- 40 marks in total

**Formulae Sheet is on pages 15.**

# PM MOCK 1

## Section A

This section of the exam contains **15 objective test (OT) questions**.

Each question is worth **2 marks** and is compulsory.

This exam section is worth **30 marks** in total.

- 1** Hera Co is developing a new product using a target costing approach. The initial assumption was that a sales volume of 200,000 units could be achieved at a selling price of \$25 per unit. However, market research indicates that to achieve the sales volume of 200,000 units, the selling price should be \$23.50.

Hera wishes to obtain an average profit margin of 20% on sales.

The following data have been estimated for the product:

Direct material	\$10.45 per unit
Hourly production volume	20 units
Direct labour cost	\$64 per hour
Variable overheads	\$82 per hour (absorbed on a direct labour hour basis)

Fixed costs to produce 200,000 units are estimated to be \$680,000.

**What reduction in the cost per unit is required in order to achieve the target cost per unit?**

- \$0.38  
 \$1.15  
 \$1.88  
 \$2.35
- 2** Smith Co has introduced environmental management accounting. The monthly environmental management accounts include input/output analysis on a scarce metal used in a production process.

**Which TWO of the following categories of output would Smith Co wish to reduce?**

- % of input included in the final product  
 % of input included in waste for recycling  
 % of input included in waste that is not recycled  
 % of input not accounted for

- 3** A company could sell 100,000 units per annum of a new product at a competitive market price of \$80 per unit. Capital investment of \$10,000,000 would be required to manufacture the product. The company seeks to earn a return on initial capital employed of 15% per annum. Preliminary costings show that prime cost is likely to be \$40 per unit.

**Calculate the target cost per unit of the new product (to the nearest \$).**

\$

- 4 Which of the following best describes the term "opportunity cost"?**
- The benefits which would have been obtained from the next best alternative foregone
  - The difference in relevant costs between two choices
  - A future cost which cannot be avoided
  - An assumed cost to reflect the use of a benefit, for which no cash is paid

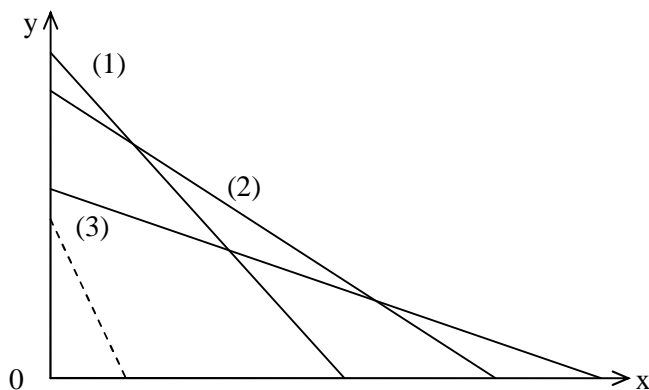
**5** Quastir Co manufactures a single product which sells for \$48.80 per unit. At this selling price, the profit per unit is \$5.35, after apportionment of the \$65,000 of fixed costs. The budgeted production and sales volume is 20,000 units.

**What is the margin of safety (to the nearest unit)?**

- 7,558 units
  - 7,850 units
  - 12,150 units
  - 12,442 units
- 6** The graph below relates to the following linear programming problem:

The objective is to maximise contribution and the dotted line on the graph depicts this function. There are three constraints which are all of the "less than or equal to" type which are depicted on the graph by the three solid lines labelled (1), (2) and (3).

**Identify, by placing an "X" on the graph the point at which contribution is maximised.**



**7** Eamon Attwood must choose between four mutually exclusive projects, all of which require the same initial investment. He has prepared the following payoff matrix:

	Annual contribution if market demand is:		
	Weak \$000	Moderate \$000	Strong \$000
Project A	32	48	61
Project B	41	54	70
Project C	47	57	68
Project D	25	36	41

If Eamon uses the maximin decision rule, which project will he choose?

Select...	▼
Project A	
Project B	
Project C	
Project D	

- 8** A product requires 24 hours to complete the first unit. Managerial experience has estimated the learning rate at 85%. For a learning rate of 85%, the value of the index of learning  $b$  is -0.2344653.

**How much time should be required to produce the sixteenth unit?**

- Between 16 and 18 hours  
 Between 10 and 12 hours  
 Between 14 and 16 hours  
 Between 8 and 10 hours
- 9** The standard mix for producing 9 litres of output of a product is as follows:

4.0 litres of D at \$9 per litre	\$ 36.00
3.5 litres of E at \$5 per litre	17.50
2.5 litres of F at \$2 per litre	5.00
	58.50

A standard loss of 10% of inputs is expected to occur. The actual inputs for the latest period were:

4,300 litres of D at \$9 per litre	\$ 38,700
3,600 litres of E at \$5.5 per litre	19,800
2,100 litres of F at \$2.2 per litre	4,620
	63,120

Actual output for this period was 9,100 litres.

**What is the yield variance for the period (to the nearest \$)?**

Select... ▼
\$631 adverse
\$650 favourable
\$3,463 favourable
\$5,850 favourable

- 10** A hospital management team assesses performance using value for money.

**Identify, by selecting the relevant boxes in the table below, which element of value for money is assessed by each of the following measures.**

The staff cost of each surgical procedure	ECONOMY	EFFICIENCY	EFFECTIVENESS
The number of patients who need to be re-admitted following surgery	ECONOMY	EFFICIENCY	EFFECTIVENESS

- 11** Which of the following are deducted from revenue in calculating residual income for divisional performance measurement?

- (1) Depreciation on non-current assets owned by the division  
 (2) Allocation of head office costs  
 (3) An imputed interest charge on all assets of the division  
 (4) Group taxation attributable to the division.
- 1 and 3 only  
 1 and 4 only  
 1, 2 and 3  
 3 and 4

**12** The manager of a division is considering a new project. The project is expected to increase the division's annual net profit by \$153,900, but it will cause net current assets to rise by \$810,000.

The manager's performance is currently evaluated against a target return on investment of 18%. However, residual income is being considered as an alternative.

The cost of capital for the division is 16%.

**Indicate, by clicking on the relevant boxes in the table below, whether the project should be accepted by the manager using each of the methods to performance appraisal.**

Target return on investment of 18%	YES	NO
Residual income	YES	NO

**13** Which of the following types of information system can be used by all departments within an organisation?

- Customer Relationship Management Systems
- Decision Support System
- Enterprise Resource Planning Systems
- Executive Information System

**14** A company manufactures three products: W, X and Y. The products use a series of different machines, but there is a common machine that is a bottleneck.

The standard selling price and standard cost per unit for each product for the next period are as follows:

	W	X	Y
	\$	\$	\$
Selling price	180	150	150
Less expenses:			
Direct material	41	20	30
Direct labour	30	20	50
Variable production overheads	24	16	20
Fixed production overheads	36	24	30
	—	—	—
Profit	49	70	20
	—	—	—
Time (minutes) on bottleneck machine	7	10	7

**Rank the products in the order they should be manufactured, assuming that the company wants to maximise throughput contribution.**

Product	Ranking	
W	1 <sup>st</sup>	
X	2 <sup>nd</sup>	
Y	3 <sup>rd</sup>	

**15** A company produces a single product. Budgeted details are as follows:

	\$
Selling price	160
Cost per unit:	
Variable cost	80
Fixed overheads	33
	-----
Profit per unit	47
	-----

Budgeted sales volume for the forthcoming three-month period is 50,000 units.  
Production capacity is 18,000 units per month.

**What is the breakeven volume for the forthcoming three-month period?**

- 1,064 units
- 10,313 units
- 20,625 units
- 35,106 units

## Section B

This section of the exam contains **three OT cases**.  
Each OT case contains a scenario which relates to **five OT questions**.  
Each question is worth **2 marks** and is compulsory.  
This exam section is worth **30 marks** in total.

### The following scenario relates to questions 16 – 20.

RJ Co produces two high performance motorcars: Car X and Car Y. The company uses a standard absorption costing system. The following budgeted information has been provided for the two products:

	<i>Car X</i>	<i>Car Y</i>
	\$	\$
Budgeted production (units)	1,100	1,600
Variable cost per unit	30,000	32,000
Machine hours to produce one car	200	300
Total budgeted machine hours	220,000	480,000

The fixed production overhead is a general production overhead (it is not product specific). The total budgeted fixed production overhead is \$26,020,000 and is absorbed using a machine hour rate.

RJ Co is considering changing to an activity based costing (ABC) system. Budgeted fixed production overhead costs have been analysed as follows:

	\$000
Machining costs	7,000
Set up costs	12,000
Quality inspections	7,020
	<hr/>
Total overheads	26,020
	<hr/>

Analysis has also revealed the following information:

	<i>Car X</i>	<i>Car Y</i>
Cars per production run (units)	10	40
Number of inspections per production run	20	80

**16 What is the total cost of Car X using absorption costing?**

- \$37,434
- \$39,462
- \$43,151
- \$53,655

**17 Calculate the overhead cost per inspection using activity based costing (ABC).**

\$

**18 What is the setup cost per unit of Car Y using ABC?**

- \$2,000
- \$4,444
- \$7,500
- \$8,000

**19** RJ Co has correctly calculated that the cost per unit of Car Y is \$43,151 using absorption costing, but only \$39,600 using ABC.

**Identify, by clicking on the relevant box in the table below, whether each of the following statements regarding the difference between these costs is true or false.**

A lower portion of the machine costs is apportioned to Car Y when using ABC, compared to absorption costing	TRUE	FALSE
A lower portion of the total set up costs is apportioned to Car Y when using ABC, compared to absorption costing	TRUE	FALSE
A lower portion of the total inspection costs is apportioned to Car Y when using ABC, compared to absorption costing	TRUE	FALSE
The cost calculated using ABC better reflects the overhead costs used in making Car Y than the absorption costing	TRUE	FALSE

**20** ABC has shown that the cost of Car X is 14% higher than the management of RJ Co had realised.

**Identify, by checking the relevant box in the table below, whether each of the following actions would reduce or increase the cost per unit of Car X.**

Reducing the number of cars per production run	REDUCE	INCREASE
Reducing the number of inspections per production run	REDUCE	INCREASE
Using higher quality components to increase the life of the cars	REDUCE	INCREASE
Running a staff training programme aimed at reducing the labour time per car	REDUCE	INCREASE
Improving the machine setup process so that the setup process is less complex and quicker to perform	REDUCE	INCREASE



**The following scenario relates to questions 21 – 25.**

A manufacturer of electronic components produces a statement comparing actual performance against budget on a monthly basis. The statement for the most recent month is set out below. Closing inventory is valued at the budgeted variable production cost per unit.

	<i>Budget</i>	<i>Actual</i>	<i>Variance</i>
Sales units	12,000	13,000	1,000
Production units	14,000	13,500	(500)
	\$	\$	\$
Revenue	360,000	385,000	25,000
Direct materials	(70,000)	(69,000)	1,000
Direct labour	(140,000)	(132,000)	8,000
Variable production overhead	(42,000)	(43,000)	(1,000)
Closing inventory	36,000	9,000	(27,000)
	<hr/>	<hr/>	<hr/>
Contribution	144,000	150,000	6,000

The finance director has reviewed the comparison above and suggested that the budget should be flexed before comparing it against the actual results for the month, as this would provide a more meaningful comparison.

**21 What is the sales price variance?**

- 25,000 favourable
- 38,000 favourable
- 20,000 adverse
- 5,000 adverse

**22 What contribution would be shown in the flexed budget?**

Select... ▼
\$144,000
\$156,000
\$174,000
\$183,000

**23 Which TWO of the following statements regarding favourable materials variance of \$1,000 shown in the statement are correct?**

- It is equal to the sum of the material price and material usage variances
- It is entirely due to the difference between budgeted and actual production quantities
- It is not possible from the information given to calculate the materials price and material usages variances
- It is meaningless as it compares actual cost with a budget for a different quantity of production

**24** The management accountant has started work on next year's budget. He is starting with the current year's budget and will adjust this for any changes he is aware of, such as inflation.

**What method of budgeting is the management accountant using?**

- Rolling budgets
- Incremental budgeting
- Flexible budgeting
- Zero based budgeting

**25** The management of RJ Co are considering introducing a more participative bottom-up style of budgeting whereby departmental managers would prepare their own budgets, which would then be approved by senior managers, after some negotiation.

**Which THREE of the following factors would make participative budgeting more appropriate?**

- Divisional managers are highly motivated and wish to take on more responsibility
- Senior managers lack the specific knowledge of customers and markets that departmental managers possess
- There is a high level of trust between senior management and departmental managers
- Departmental managers do not have a good understanding of accounting
- There is a high degree of dependency between each department requiring coordination

**The following scenario relates to questions 26 – 30.**

QP Co is a food processing company that produces pre prepared meals for sale to major supermarket groups. The company makes two types of pre-prepared meals. These are produced in batches of 100 units. Costs and selling price per batch are as follows:

	<i>PN</i>	<i>BE</i>
	\$	\$
Selling price	450	270
Materials	190	177
Labour (at \$30 per hour)	90	30
Variable production overheads	30	10
Factory fixed overheads absorbed	40	30
Labour hours per batch	3	1
Budgeted weekly output	250	340
Maximum weekly demand	300	400

Variable production costs are charged at \$10 per labour hour and reflect the energy used by the machines when labourers are working.

Factory fixed costs are not specific to the products and are absorbed based on an old activity based study. Fixed costs will be 100% absorbed if production is as per the budget.

There is currently a shortage of the skilled labour required to run the machines and labour hours are limited to 1,000 hours per week. Labour is fully flexible and can work on both products.

**26 What weekly production output would maximise profit?**

- |                       |             |             |
|-----------------------|-------------|-------------|
|                       | <i>PN</i>   | <i>BE</i>   |
| <input type="radio"/> | 200 batches | 400 batches |
| <input type="radio"/> | 300 batches | 100 batches |
| <input type="radio"/> | 220 batches | 340 batches |
| <input type="radio"/> | 250 batches | 250 batches |

**27** The unions have informed management that the workers would be prepared to work overtime at the weekend but would expect a higher hourly rate of pay. The shadow price of labour has been calculated as \$46.7 per hour.

**What is the maximum hourly rate that management should pay for the weekend working (to two decimal places)?**

\$

**28** The finance director wishes to introduce throughput accounting taking labour as the bottleneck process. Labour and variable overheads are fixed in the short run at 1,000 hours per week.

**What is the throughput accounting ratio of PN?**

- 1.44
- 1.54
- 1.73
- 3.94

**29 Identify, by clicking on the relevant box in the table below, whether each of the following actions would reduce or increase the throughput accounting ratio of the two products.**

Buying higher quality materials to improve the quality of output	REDUCE	INCREASE
Reducing the selling price to sell more units	REDUCE	INCREASE
Training staff to reduce the time taken to make one unit	REDUCE	INCREASE
Finding ways to reduce the fixed costs using the activity based costing information	REDUCE	INCREASE
Automating some of the tasks performed by labour to increase productivity	REDUCE	INCREASE

**30** One of the materials used in the production of product PN is Material X. The management accountant has calculated that the slack for Material X is 500 kg per week.

**What does a slack of 500 kg per week for material X represent?**

- The quantity of Material X that is available each week
- The excess of Material X available over production needs
- The additional kilos of Material X needed to meet required production
- How much inventory of Material X is kept in case of future shortages

## Section C

This section of the exam contains **two constructed response questions**.

Each question contains a scenario which relates to one or more requirement(s).

Each question is worth **20 marks** and is compulsory.

This exam section is worth **40 marks** in total.

### 31 The following scenario relates to three requirements.

Boro Co has identified a market for a new product, the Madison, at a selling price of \$115 per unit. The company believes that it will be able to sell 2,000 units of the Madison per month.

The estimated cost structure for the product per unit is as follows:

- Raw materials: 8.5kg at \$2 per kg
- Special ingredient Z: 2 kg
- Other variable costs are 60% of selling price

Boro Co has been offered supplies of special ingredient Z at a transfer price of \$15 per kg by Magpie Co which is part of the same group of companies. Magpie Co charges this same price to its external customers. Magpie Co bases its external prices on total cost plus 25% profit mark-up. Total cost has been estimated as 75% variable and 25% fixed. Internal transfers to Boro Co would enable \$1.50 per kg of variable packing cost to be avoided.

There are currently no other suppliers of special ingredient Z.

- (a) **Calculate the maximum transfer price that would be acceptable to Boro Co for special ingredient Z.** (3 marks)
- (b) **Calculate and explain the minimum transfer price that Magpie Co would be prepared to accept for supplying special ingredient Z to Boro Co under each of the following situations:**
- (i) Magpie Co has monthly spare production capacity for 4,000 kg of special ingredient Z for which no external market is available. (5 marks)
  - (ii) Magpie Co has an external market for all of its production of special ingredient Z at a selling price of \$15 per kg. (2 marks)
  - (iii) Conditions are as per (i) but Magpie Co has an alternative use for some of its spare production capacity. This alternative use is equivalent to 2,000 kg of special ingredient Z and would earn a contribution of \$6,000. (4 marks)
- (c) Assume that conditions are as per (b) (i) where Magpie Co has a spare production capacity of 4,000 kg of special ingredient Z. Magpie Co is insisting on a transfer price of \$15 per kg of special unit Z.
- (i) **Explain the decision of the manager of Boro Co if offered such a price.** (2 marks)
  - (ii) **Explain and calculate the impact that a decision not to purchase ingredient Z will have on the profits of the group.** (4 marks)
- (20 marks)**

**32 The following scenario relates to five requirements**

GTK Co makes high quality stereo headphones. The market for this product is growing rapidly due to the increased use of MP3 players and mobile devices.

The company uses a standard costing system to assess the performance of its managers. At the start of the period under review, the following standard cost card was calculated for one product, the delta:

	\$ per unit
Selling price	12.48
Variable cost (standard and actual)	4.2
	8.28
Standard contribution	8.28
Forecast sales volume	30,000
Actual sales volume	32,000
Actual selling price	\$12.36

At the end of the period, the finance director noted that a mistake had been made in forecasting selling price inflation. Inflation was lower than expected and the finance director believes that a lower standard selling price per unit of \$12.18 should have been used.

- (a) **Using a marginal costing approach, calculate the selling price variance and the sales volume contribution variance and reconcile budgeted contribution to actual contribution based on the original standard.**

	A	B	C	1
1				
2				
3				

(4 marks)

- (b) **Using a marginal costing approach, analyse the selling price variance into planning and operational variances.**

	A	B	C
1			
2			
3			

(4 marks)

- (c) **Comment on the meaning of each of the variances calculated in parts (a) and (b) and the overall performance of the sales department.**

(4 marks)

- (d) The managing director of GTK Co has expressed some surprise about the proposal of the finance director that the standard cost should be revised. "What's the point in having a standard cost if we actually change it at the end of the year before doing variance analysis?" he asked. "Doesn't this just mean that we move the goal posts to ensure we meet the target?"

**Describe the principles that should be applied in deciding whether a standard should be revised at the end of the year, prior to variances.**

(4 marks)

- (e) The production manager has requested that the standard cost be revised to reflect a higher than expected wage increase. When the standard was set, the expected pay rise was 2% – in line with inflation. The production manager claimed that the extra pay rise was necessary as the workers were de motivated. "I gave them all 5% to keep them happy!" he said.

**Discuss the request of the production manager to revise the standard cost, putting what you see as both sides of the argument and reach a conclusion as to whether or not the standard should be revised.**

(4 marks)

**(20 marks)**

<sup>1</sup> A blank spreadsheet would be the most suitable layout for such a question in the exam.

## Formulae Sheet

### Regression analysis

$$y = a + bx$$

$$a = \frac{\sum y}{n} - \frac{b \sum x}{n}$$

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

### 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

$$P = a - bQ$$

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

$$a = \text{price when } Q = 0$$

$$MR = a - 2bQ$$

## End of Questions