Applied Skills

Performance Management

Mock Exam 2 – Questions

PM MOCK 2

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 16.

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   Sound Co specialises in the manufacture of designer headphones. It is currently considering the development of a new product that connects to smartphone using Bluetooth technology. It would take one year to develop, with sales then commencing at the beginning of the second year. The product is expected to have a life cycle of two years, before it is replaced with a technologically superior product. The following cost estimates have been made.

	Year 1	Year 2	Year 3
Units manufactured and sold		140,000	160,000
Research and development costs	$1,000,000		
Manufacturing costs:			
Variable cost per unit		$40	$45
Fixed production costs		$650,000	$700,000

What is the forecast lifecycle cost per unit (to two decimal places)?

$ [   ]

2   **Indicate, by clicking the relevant box in the table below whether each of the following statements regarding target costing is correct or incorrect.**

It can be used for existing products only, as the unit cost of planned products is unknown	CORRECT	INCORRECT
It can be used in both manufacturing and service industries	CORRECT	INCORRECT
It assumes that the selling price of a product cannot be increased	CORRECT	INCORRECT
It assumes that the cost per unit of a product cannot be reduced	CORRECT	INCORRECT

3   **Identify, by clicking the relevant box in the table below, whether each of the statements regarding closed systems is true or false.**

They are protected from harmful influences from outside of the system	TRUE	FALSE
They are likely to adapt to the environment around them	TRUE	FALSE
They will not survive as long as open systems	TRUE	FALSE
Totally closed systems are uncommon	TRUE	FALSE

4   Jest Co has two divisions, X and Y. The manager of each division is currently considering the following separate projects:

	Division X	Division Y
Capital required for the project	$48.9 million	$33.3 million
Revenue generated by project	$21.6 million	$13.2 million
Operating profit margin	30%	24%
Cost of capital	10%	10%
Current return on investment (ROI) of division	15%	9%

If ROI is used as the basis for assessing the performance of the divisional managers, which Division(s) would choose to invest in its project?

    O   Division X only
    O   Division Y only
    O   Both Division X and Division Y
    O   Neither Division X nor Division Y

5   A builder planned to complete four houses of similar design in a small community. The initial house requires 4,000 hours to complete. The experienced crew has a learning rate of 80%. For a learning rate of 80%, the value of the index of learning b is −0.3219281.

Assuming an average labour rate of $18 per hour, identify, by clicking on the line below, the range within which the estimated labour cost for the fourth house will lie.

$35,000	$40,000	$45,000	$50,000
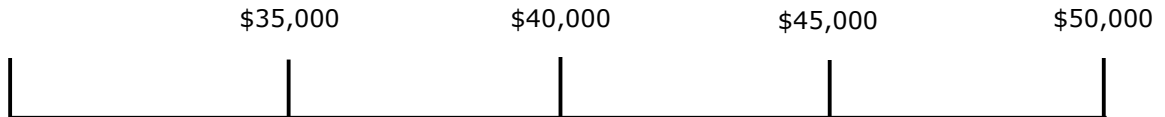
6   A manufacturer of electronic products is trying to decide which of three products to launch. Only one of the three products can be launched, as the products are considered to be substitutes for each other.

The management accountant and sales manager have worked together to produce the following payoff table showing annual profits in $ millions:

Market demand	Weak	Average	Good
Probability	0.30	0.50	0.20
Product A	400	500	600
Product B	300	350	700
Product C	(200)	450	1,000

The company is interested to know which product would be suggested by each of the maximin and expected value criteria for decision making under risk.

Which of the following products would be suggested by each of the two methods?

	Maximin	Expected value
O	Product A	Product A
O	Product A	Product B
O	Product C	Product A
O	Product C	Product B

7   Triple Co makes two designs of gold watch, the Diva and the Classic, for which the following information is available:

	Diva	Classic	Total
Budgeted production (units)	750	1,250	2,000
Number of production runs	75	115	190
Number of movements of materials	12	21	33
Number of inspections	150	180	330

Total budgeted production overheads are as follows:

	$
Materials handling costs	6,600
Set-up costs	76,000
Inspection cost	39,600

Using activity-based costing, what is the budgeted overhead cost per unit of the Classic design?

O $57.44
O $59.17
O $61.10
O $67.20

8   **Which TWO of the following would lead to an adverse labour efficiency variance?**

☐   Failing to take into account the learning curve when developing the standard

☐   Using an ideal standard for labour time as part of a quality improvement programme

☐   Lower grade material was purchased leading to a reduction in productivity

☐   An unplanned increase in the hourly wage not taken into account in the standard

9   The following are types of management information:

(1)   Information about the actions of global competitors
(2)   A detailed monthly variance report
(3)   A five year forecast of revenue and profits for the organisation

Which of the above are normally associated with strategic management and control?

○   2 only
○   1 and 2 only
○   1 and 3 only
○   1, 2 and 3

10   Emblo Co is a divisionalised company. Divisional managers have a high degree of autonomy. The suitability of return on investment (ROI) and residual income (RI) as the basis for the bonus paid to divisional managers was recently discussed by head office managers.

Identify, by clicking the relevant box in the table below, whether each of the statements is true or false.

ROI will always motivate divisional managers to make decisions which meet corporate goals	TRUE	FALSE
RI can be used to compare performance between divisions	TRUE	FALSE
Using RI allows risk to be included in the assessment of divisional performance	TRUE	FALSE
Using ROI is less likely to lead to goal incongruence than using RI	TRUE	FALSE

11   **Indicate, by clicking the relevant box in the table below whether each of the following statements regarding decision support systems is correct or incorrect.**

They cannot tell the user which is the best decision in situations where judgement is required	CORRECT	INCORRECT
They analyse large volumes of data and provide information about the likely outcome of decisions	CORRECT	INCORRECT
They are normally associated with operational managers	CORRECT	INCORRECT
They aim to meet the needs of all departments in the organisation using a shared database	CORRECT	INCORRECT

12 **Match the following measures to the relevant perspective of the balanced scorecard for an insurance company.**

Measures	Financial perspective	Internal business processes
Percentage of policy renewals		
Training expenditure on sales representatives		

	Customer perspective	Learning and growth
Average time to settle insurance claims		
Return on investment		

13 Coolbreeze Co manufactures refrigerators. The company is organised on a divisionalised basis and has two divisions (compressor and cabinet).

The compressor division transfers 65% of its output to the cabinet division for $85 per unit and sells the remaining output to external companies for $92 per unit.

The cabinet division sells the final product at an average selling price of $495 per unit.

In the next month, it expected that the compressor division will produce 27,000 units. The variable cost of manufacturing compressors is $62 per unit.

What contribution will the compressor division generate in the next month?

Select… ▼
$621,000
$687,150
$743,850
$810,000

14 **Which of the following costs may be considered environmental costs, assuming a broad definition of environmental costs?**

(1)   Fines for breaching pollution limits
(2)   The costs of disposing of toxic waste
(3)   Costs of activities incurred to increase energy efficiency
(4)   The costs of promoting an organisation's environmental activities

○   1, 2 and 3 only
○   1 and 3 only
○   2 and 4 only
○   1, 2, 3 and 4

15 Dawson Co currently sells one of its products for $500, at which price annual demand is 240,000 units.

If the price elasticity of demand is 1.25, what would annual demand be if the selling price were increased to $600?

          units

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.

The following scenario relates to questions 16 – 20.

A company makes a product using two materials, X and Y. A system of standard costing and variance analysis is in operation. The standard material requirement per tonne of output is 60% X at $30 per tonne and 40% Y at $45 per tonne. There is a standard yield of 90%.

The following information has been gathered for the most recent month:

Output achieved (tonnes)	765
Materials purchases	
X 500 tonnes@ $33 per tonne	
Y 360 tonnes @ $45 per tonne	
Actual material used:	
X (tonnes)	480
Y (tonnes)	360

16 **What was the adverse material mix variance for the month (to the nearest $)?**

$ [_____]

17 **What was the material yield variance for the month?**

○　　　A favourable variance of $360
○　　　A favourable variance of $379
○　　　A variance of $0
○　　　An adverse variance of $3,000

18 **What was the usage variance for the month?**

○　　　A favourable variance of $360
○　　　A variance of $0
○　　　An adverse variance of $1,080
○　　　An adverse variance of $3,060

19 The production manager has decided to vary the production mix, inputting a higher proportion of X and a lower proportion of Y than the standard.

The sales manager has complained that the quality of the product will suffer and this may lead to a fall in demand for the product.

Indicate, by clicking the relevant box in the table below, whether each of the following variances would be favourable or adverse as a result of the production manager's decision.

Mix variance	FAVOURABLE	ADVERSE
Yield variance	FAVOURABLE	ADVERSE
Sales volume variance	FAVOURABLE	ADVERSE
Sales price variance	FAVOURABLE	ADVERSE

20 **Identify, by clicking the relevant box in the table below, whether each of the following statements regarding the use of standard costing as a system of budgeting and control is true or false.**

The budget is based on analysing the planned activities and ignores prior years	TRUE	FALSE
Actual costs are compared with predetermined costs for the budgeted level of activity	TRUE	FALSE
Actual costs are compared with predetermined costs for the actual level of activity	TRUE	FALSE
Budgets based on standard costs are particularly useful in services industries where customised services are prepared for clients	TRUE	FALSE

Sarun Co's product range includes three products, each of which requires the use of a specialised machine, Machine A, which is used to manufacture all three products. Capacity of Machine A is limited to 700 hours per quarter.

Budgeted data for the most recent 13-week period is shown below:

Product	Xon	SuperXon	MegaXon
Selling price ($ per unit)	360.00	450.00	550.00
Variable costs ($ per unit)			
Materials	111.40	114.50	116.30
Labour:	95.60	138.45	166.65
Variable overheads	33.60	50.40	61.60
Maximum demand (units)	450	340	280
Machine A hours per unit	0.50	0.75	1.00

21   Rank the products in the order they should be manufactured, assuming that the company wants to maximise profit.

Product		Ranking	
Xon		1st	
SuperXon		2nd	
MegaXon		3rd	

22   The management accountant has calculated that the shadow price of machine hours is $195.53.

Which of the following statements regarding the meaning of the shadow price is correct?

○   The fixed cost per machine hour is $195.53
○   The premium that must be paid for additional machine time is $195.53
○   The variable cost of running the machine for one hour is $195.53
○   If additional machine hours become available, total contribution would increase by $195.53 per hour

23   The management of Sarun Co has decided to introduce throughput accounting since labour and variable overheads are fixed in the short run due to commitments to provide all workers with a minimum number of hours per week.

What is the throughput return per hour for the Xon (to two decimal places)?

$ [   ]

24   Sarun Co operates in a competitive market where the price is determined by the market. The company has an old machine, Machine B, which is no longer used and was replaced by Machine A. Machine B performs the same process as Machine A, although the output per hour is 25% lower. Machine B could be brought back into service without increasing the overhead costs of Sarun Co. The process performed by Machine A has been identified as a bottleneck.

Which of the following would be feasible ways to improve the throughput accounting ratios of Sarun Co's products?

(1)   Reduce the time spent per unit on Machine A
(2)   Increase the bottleneck resource hours by Machine A operators working overtime
(3)   Increase the selling prices of the products
(4)   Bring Machine B back into service to work alongside Machine A

O   1, 2 and 4
O   1 and 4 only
O   2, 3 and 4
O   2 and 3 only

25   Which TWO of the following statements about the theory of constraints are true?

☐   Non-bottleneck resources should be fully utilised

☐   Bottleneck resources should work at full capacity

☐   The process of improvement ends when a bottleneck has been eliminated

☐   The output of a bottleneck resource may be increased without incurring additional capital expenditure

The following scenario relates to questions 26 – 30.

Lyle manufactures machine tools. One of its products is a hydraulic wrench for use in car servicing. Lyle is considering its pricing policy. It has already carried out some market research into the expected levels of demand for the hydraulic wrench at different selling prices, with the following results:

Selling price per unit ($)	Annual demand (units)
100	50,000
120	45,000
130	40,000
150	25,000

Variable costs per unit are $71. Fixed costs are $120,000 per year, but if output rises above 40,000 units, then additional capacity would be necessary so fixed costs would increase to $240,000.

26 **What selling price per unit should be set for the hydraulic wrench to maximise profit?**

- ○ $100
- ○ $120
- ○ $130
- ○ $150

27 **Identify, by clicking on the relevant box in the table below, the value of each of the following when output is 45,000.**

Marginal revenue	GREATER THAN ZERO	LESS THAN ZERO
Price elasticity of demand	GREATER THAN ONE	LESS THAN ONE

28 Lyle is considering its pricing strategy for a new product, the super wrench. It is unlike any other product that is currently available and will considerably improve the efficiency with which garages can service motor vehicles. This unique position in the market place is expected to remain for only six months before one of Lyle's competitors develops a similar product.

Which initial approach to pricing would be most appropriate for the super wrench?

Select…   ▼
Penetration pricing
Going rate pricing
Cost plus pricing
Price skimming

29 Lyle is preparing its budgets for the super wrench. The time taken to manufacture the first unit was 24 minutes. It is expected that an 80% learning curve will apply for the first three months of production. The learning factor b is −0.3219 for a learning rate of 80%.

What is the expected time to produce the 8th unit (to nearest 0.1 minutes)?

- ○ 2.00 minutes
- ○ 4.00 minutes
- ○ 8.50 minutes
- ○ 12.30 minutes

30 **Which THREE of the following statements about cost plus pricing are correct?**

- ☐ It takes into account demand from customers

- ☐ Marginal cost plus is more suitable for short-term decisions than absorption cost plus

- ☐ Profit is maximised if a cost plus price is used

- ☐ It is useful for justifying prices to customers

- ☐ Absorption cost plus price guarantees that all costs will be covered

- ☐ The mark-up will be arbitrary

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 five requirements.

Bootiful Foods (BF) is a small company that produces pre-cooked meals which are sold to supermarkets. BF manufactures two types of meal: the Chicken Supreme and the Chicken Tikka.

Due to an outbreak of bird flu in the country where BF is based, there is a limited amount of chicken available. Furthermore, no additional labour can currently be recruited due to tight labour market conditions. Maximum demand for Chicken Tikka is 30 batches per day. BF can sell as much Chicken Supreme as it can produce.

The management accountant has correctly formulated the following linear programming model to help identify the optimal production plan:

Let x = daily output of Chicken Supreme (batches)
Let y = daily output of Chicken Tikka (batches)

The objective function is to maximise contribution, C = 50x + 120 y
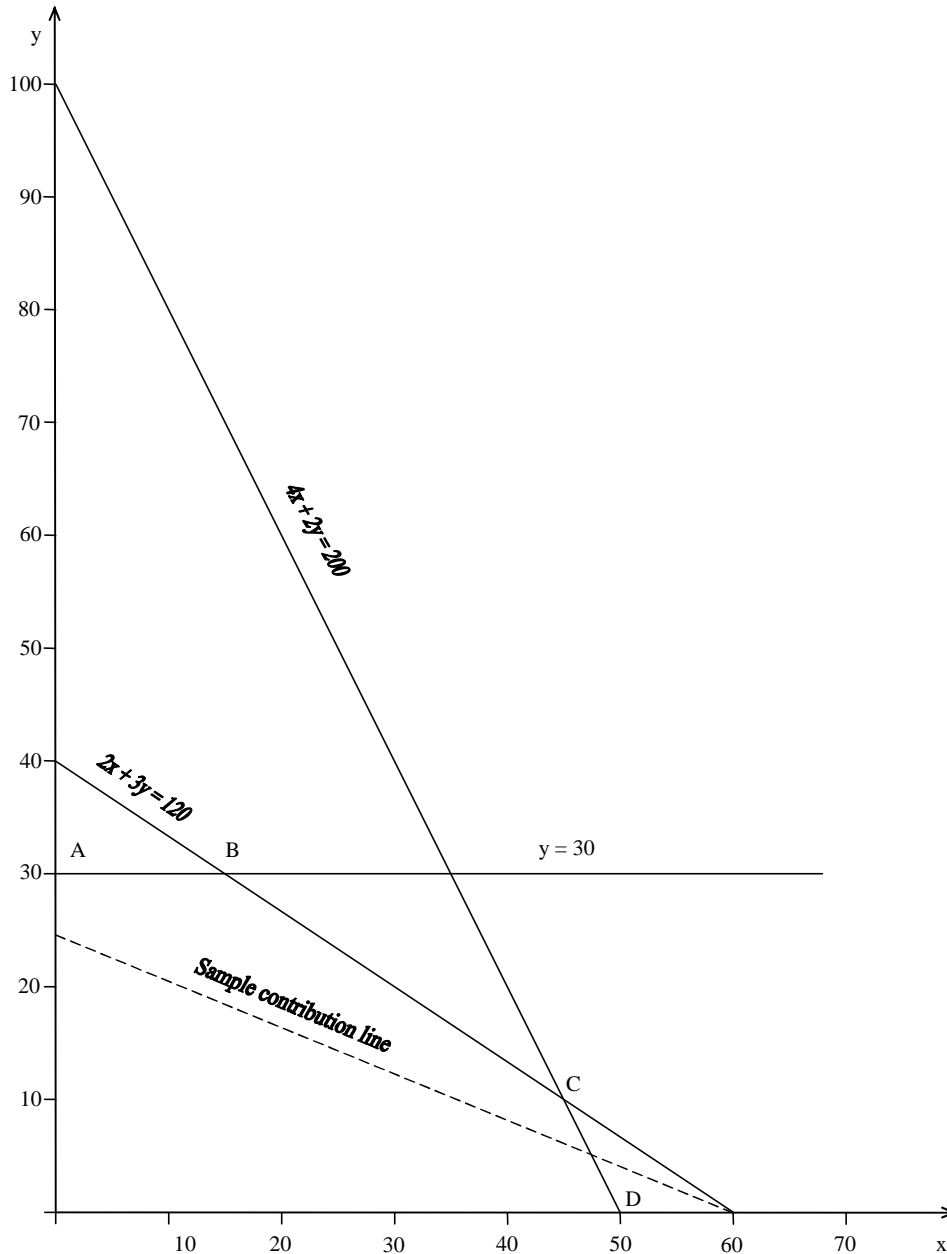
Subject to the constraints:

2x + 3y ≤ 120	(Labour constraint)
4x + 2y ≤ 200	(Number of chickens)
y ≤ 30	(Demand for chicken tikka)
x ≥ 0, y ≥ 0	(Non-negativity constraints)

The constraints and objective function have been correctly represented by the graph which follows.

Required:

(a) Identify the point on the diagram (A, B, C or D) at which contribution is maximised and calculate the daily output of the two products at this point and the related contribution. (4 marks)

(b) Explain the term "shadow price" when applied to a scarce resource and explain how shadow prices can be useful to the management of BF. (3 marks)

(c) Calculate the shadow price of labour per hour for BF. (4 marks)

(d) The workers' representative has suggested that the 15 workers would each be prepared to work up to 3 hours overtime per day for three times their normal rate of pay, which is $10 per hour.

Analyse and critically discuss whether BF should accept the offer of overtime at three times the normal rate of pay. (4 marks)

(e) Discuss the limitations of using linear programming as a decision-making tool in practice. (5 marks)

(20 marks)

32   The following scenario relates to two requirements.

Bombay Call Centre was opened in India eight years ago. It provides two major services for its clients, primarily large retail chains. First, it holds databases for catalogue sales, connected in real time to clients' inventory control systems. Second, its call centre operation allows its clients' customers to place orders by telephone.

The call centre charges each retail client a lump sum each year for the IT and communications infrastructure it provides. There is a 12-month contract in place for each client. In addition, Bombay earns a fixed sum for every order it processes, plus an additional amount for every line item. If items are not in inventory, Bombay earns no processing fee.

Bombay call centre employed 70 operators in Year 1 and 80 in each of Year 2 and Year 3. In addition, a management team, training staff and administrative personnel are employed. Like other call centres, there is a high turnover of call centre operators (over 100% per annum) and this requires an almost continuous process of staff training and detailed supervision and monitoring. Due to the successful growth experiences in the Indian economy, the call centre finds it increasingly difficult to attract staff with the skills it requires, and there has been pressure to increase wages and salaries in order to attract new staff.

A summary of Bombay Call Centre's financial performance for the last three years is provided below (where year 3 is the most recent year).

Table 1

	Year 1 $000	Year 2 $000	Year 3 $000
Revenue			
Contract fixed fee	400	385	385
Order processing fees	2,500	3,025	3,450
Line item processing fees	600	480	390
	_____	_____	_____
Total revenue	3,500	3,890	4,225
Expenses			
Office rent & expenses	200	205	210
Operator salaries & related costs	1,550	1,920	2,180
Management, administration & training salaries	1,020	1,070	1,120
IT related expenses	300	310	330
Other expenses	150	200	220
	_____	_____	_____
Total expenses	3,220	3,705	4,060
Operating profit	280	185	165

Non-financial performance information for the Bombay call centre for same period is as follows:

Table 2

	Year 1	Year 2	Year 3
Number of incoming calls received	1,200,000	1,300,000	1,350,000
Number of orders processed	1,000,000	1,100,000	1,150,000
Order strike rate (orders/calls)	83.3%	84.6%	85.2%
Number of line items processed	3,000,000	3,200,000	3,250,000
Average number of line items per order	3.0	2.9	2.8
Number of retail clients	8	7	7
Fixed contract income per client	$50,000	$55,000	$55,000
Income per order processed	2.50	2.75	3.00
Income per line item processed	0.20	0.15	0.12
Average number of orders per operator	15,000	15,000	15,000
Number of operators required	66.7	73.3	76.7
Actual number of operators employed	70.0	80.0	80.0

Required:

(a) **Assess the financial performance of Bombay call centre for the last three years.**
Note: Up to 6 marks are available for the ratio calculations. (12 marks)

(b) **Using the data provided in table 2, comment on the non-financial performance of the Bombay call centre. You should categorise your comments under the following headings:**

    (i)   **Competitiveness;**
    (ii)   **Resource utilisation.** (8 marks)

                                                                                            (20 marks)

Formulae Sheet

Regression analysis

$$y = a + bx$$

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

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

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

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 Questions