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PERFORMANCE MANAGEMENT

Pilot Paper Demonstration Exam

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

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.

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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. Polish Orange Co. manufactures two products (X and Y). The overhead costs (PLN84,000) have been divided into three cost pools that use the following activity drivers:**

<u>Product</u>	<u>Number of Setups</u>	<u>Machine Hours</u>	<u>Packing Orders</u>
X	10	500	75
Y	10	2,000	175
Cost per pool	PLN 9,000	PLN 60,000	PLN 15,000

What is the amount of overhead cost to be assigned to Product X using machine hours as the allocation base?

- a. PLN 12,000
- b. PLN 60,000
- c. PLN 48,000
- d. PLN 16,800

2. The Warsaw plant has two categories of overhead: maintenance and inspection. Costs expected for these categories for the coming year are as follows:

Maintenance	PLN 50,000
Inspection	PLN 75,000

The plant currently applies overhead using direct labor hours and expected capacity of 50,000 direct labor hours. The following data have been assembled for use in developing a bid for a proposed job:

Direct materials	PLN 500
Direct labor	PLN 2,000
Machine hours	500
Number of inspections	4
Direct labor hours	800

Total expected machine hours for all jobs during the year is 25,000, and the total expected number of inspections is 1,500.

Using activity-based costing and the appropriate activity drivers, the total cost of the potential job would be

- a. PLN 1,200
- b. PLN 1,800
- c. PLN 3,700
- d. PLN 3,875

- 3. Dog Company is facing increased competitive pressure for its main product. Dog's management feels that lowering the price per unit will enable the company to maintain its market share. The following information has been extracted from Dog's records:**

Current sales price	PLN 12.00
Current profit per unit	PLN 3.00
Proposed sales price	PLN 10.00
Proposed profit per unit	PLN 2.00

Dog Company's target cost per unit is

- a. PLN 9.50
- b. PLN 8.00
- c. PLN 7.50
- d. PLN 7.00

4. **The theory of constraints uses the following five steps to achieve its goal of improving organizational performance:**

1. Exploit the binding constraints
2. Elevate the organization's binding constraints
3. Identify an organization's constraints
4. Repeat the process as a new constraint emerges to limit output
5. Subordinate everything else to the decisions made when exploiting the binding constraints

What is the correct order for performing these steps?

- a. 3, 1, 5, 2, 4
- b. 3, 5, 1, 2, 4
- c. 1, 3, 5, 2, 4
- d. 3, 1, 5, 4, 2

5. **Motor Company manufactures 7,500 units of a particular part. The unit cost to manufacture this part is as follows:**

Direct materials	PLN 3
Direct labor	PLN 4
Variable manufacturing overhead	PLN 2
Fixed manufacturing overhead	<u>PLN 8</u>
Total	<u>PLN17</u>

Dunny Company offered to sell 7,500 units of the part to the Motor Company for PLN14 per unit. Motor has determined that 75 percent of the fixed manufacturing overhead will continue even if the part is purchased from Dunny and now must decide whether to accept Dunny's offer. Motor has calculated the relevant costs of manufacturing the part internally to be

- a. PLN 127,500
- b. PLN 112,500
- c. PLN 82,500
- d. PLN 67,500

6. The Alien Company had the following income statement for the month of July:

Sales (PLN 60 x 10,000)		PLN 600,000
Cost of goods sold:		
Direct materials (PLN12 x 10,000)	PLN 120,000	
Direct labor (PLN9 x 10,000)	90,000	
Variable factory overhead (PLN7.50 x 10,000)	75,000	
Fixed factory overhead	<u>120,000</u>	<u>405,000</u>
Gross profit		PLN 195,000
Selling and administrative expenses:		
Variable (PLN1.50 x 10,000)	PLN 15,000	
Fixed	<u>90,000</u>	<u>105,000</u>
Operating income		<u>PLN 90,000</u>

What is the sales volume required to earn a before tax profit of PLN 9,000?

- a. 3,300 units
- b. 10,000 units
- c. 7,300 units
- d. 4,300 units

7. Which of the following statements is NOT true concerning operating leverage?

1. The greater the degree of operating leverage, the more that changes in fixed costs will affect variable costs.
2. Firms with higher degrees of operating leverage are less risky than firms with lower degrees of operating leverage.
3. Firms with lower degrees of operating leverage have a high level of fixed costs in their cost structure.
4. The greater the degree of operating leverage, the more that changes in sales activity will affect profits.

A: 1, 2, 3

B: 2, 3, 4

C: 3, 4, 1

D: 4, 1, 2

8. **The Vehicle Division of Insurance Company employs three claims processors capable of processing 5,000 claims each.**

The division currently processes 12,000 claims. The manager has recently been approached by two sister divisions. Division A would like the Vehicle Division to process approximately 2,000 claims. Division B would like the Vehicle Division to process approximately 5,000 claims. The Vehicle Division would be compensated by Division A or Division B for processing these claims. Assume that these are mutually exclusive alternatives. Claims processor salary cost is relevant for

- a. the Division A alternative only
- b. the Division B alternative only
- c. both the Division A and the Division B alternative
- d. neither the Division A nor the Division B alternative

9. Peanut Products is thinking of expanding their product line. Their current income statement is as follows:

Revenues		PLN 600,000
Cost of Goods Sold:		
Direct Materials	PLN 250,000	
Direct Labor	PLN 100,000	
Overhead	<u>PLN 80,000</u>	<u>PLN 430,000</u>
Gross Profit		PLN 170,000
Selling and Administrative		<u>PLN 70,000</u>
Operating Income		<u><u>PLN 100,000</u></u>

The cost of the new product is PLN 95 per unit made up of PLN 50 of direct materials, PLN 35 of direct labor and PLN 10 of overhead per unit. What is the bid price assuming Peanut utilizes a mark-up on direct materials?

- a. PLN 70
- b. PLN 133
- c. PLN 119
- d. PLN 19.77

10. **Brown Company sells a product for PLN 10. Budgeted sales for the first quarter of the current year are as follows:**

	<u>Budgeted Sales</u>
January	PLN 600,000
February	PLN 800,000
March	PLN 900,000

The company wants to maintain an inventory of finished units equal to 30 percent of the following month's sales, and 10,000 units are on hand at the beginning of the year.

Each unit requires two kilograms of raw material costing 1 PLN per kg. The company maintains a raw materials inventory equal to 20 percent of the following month's production needs.

Budgeted production in units for February would be

- a. 131,000
- b. 107,000
- c. 83,000
- d. 80,000

11. Grey Industries produces two products. Information about the products is as follows:

	Product X	Product Y
Units produced and sold	100	500
Selling price per unit	PLN 400	PLN 200
Variable expenses per unit	PLN 260	PLN 70

The company's fixed costs totaled PLN 80,000, of which PLN 29,000 can be avoided if Product X is dropped and PLN 45,000 can be avoided if Product Y is dropped. Grey's segment margin for Product Y is:

- a. PLN 65,000
- b. (PLN 20,000)
- c. PLN 25,000
- d. PLN 20,000

12. Which of the following statements are true:

1. Currently attainable standards are based on an efficiently operating work force.
2. Currently attainable standards are based on ideal conditions.
3. Currently attainable standards allow for downtime and rest periods.
4. Currently attainable standards are based on present production processes and technology.

A: 2, 3, 4

B: 1, 2, 3

C: 1, 2, 4

D: 3, 4, 5

13. Concrete Company has two divisions, A and B. Information for each division is as follows:

	<u>A</u>	<u>B</u>
Net earnings for division	PLN 40,000	PLN 260,000
Asset base for division	PLN 100,000	PLN 1,200,000
Target rate of return	15%	18%
Margin	10%	20%
Weighted average cost of capital	12%	12%

What is EVA for Division A?

- a. PLN 40,000
- b. PLN 25,000
- c. PLN 15,000
- d. PLN 28,000

14. Which of the following is a disadvantage of the ROI performance measure?

1. It encourages managers to focus on the long run rather than the short run.
2. It discourages managers from investing in projects that would decrease divisional ROI but increase the profitability of the company as a whole.
3. It encourages myopic behavior.
4. All are disadvantages of the ROI measure.

A: 2, 3, 4

B: 1, 2, 3

C: 1, 2, 4

D: 3, 4, 5

15. Pantera Company had the following historical accounting data per unit:

Direct materials	PLN 60
Direct labor	30
Variable overhead	15
Fixed overhead	24
Variable selling expenses	45
Fixed selling expenses	9

The units are normally transferred internally from Division A to Division B. The units also may be sold externally for PLN 210 per unit. The minimum profit level accepted by the company is a markup of 30 percent. There were no beginning or ending inventories.

What would be the transfer price if Division X uses full cost plus markup?

- a. PLN 167.70
- b. PLN 198.90
- c. PLN 136.50
- d. PLN 129.00

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.

Billy Company developed the following budgeted life-cycle income statement for two proposed products. Each product's life cycle is expected to be two years.

	<u>Product A</u>	<u>Product B</u>	<u>Total</u>
Sales	PLN 200,000	PLN 200,000	PLN 400,000
Cost of goods sold	<u>120,000</u>	<u>130,000</u>	<u>250,000</u>
Gross profit	<u>PLN 80,000</u>	<u>PLN 70,000</u>	PLN 150,000
Period expenses:			
Research and development			(70,000)
Marketing			<u>(50,000)</u>
Life-cycle income			<u>PLN 30,000</u>

A 10 percent return on sales is required for new products. Because the proposed products did not have a 10 percent return on sales, the products were going to be dropped.

Relative to Product B, Product A requires more research and development costs but fewer resources to market the product. Sixty percent of the research and development costs are traceable to Product A, and 30 percent of the marketing costs are traceable to Product A.

- 16. If research and development costs and marketing costs are traced to each product, life-cycle income for Product A would be**
- a. PLN 38,000.
 - b. PLN 27,000.
 - c. PLN 23,000.
 - d. PLN 15,000.

17. If research and development costs and marketing costs are traced to each product, life-cycle income for Product B would be
- a. PLN 35,000.
 - b. PLN 20,000.
 - c. PLN 12,000.
 - d. PLN 7,000.

18. Return on sales for Product A would be

- a. 40.0%.
- b. 25.0%.
- c. 11.5%.
- d. 2.5%.

19. When is the best time during the product life cycle to implement cost reduction measures?

- a. during the production stage of the product life cycle
- b. during the planning stage of the product life cycle
- c. during the logistics stage of the product life cycle
- d. at any time during the product life cycle

20. Life-cycle cost management does NOT consist of

1. actions taken to enable a product to be designed, developed, produced, marketed, distributed, operated, maintained, serviced, and disposed of in order to maximize profits.
2. actions to extend the life of a product through design, development, production, and maintenance.
3. actions that focus on minimizing the cost of developing, designing, producing, distributing, operating, servicing, and disposal of a product.
4. actions taken to design, develop, test, market, distribute, maintain, service, and dispose of a product to maximize revenues.

A: 1, 2, 3

B: 2, 3, 4

C: 3, 4, 1

D: 4, 1, 2

The following scenario relates to questions 21-25.

Rax Company has developed the following standards for one of its products:

Direct materials	12 kilograms @ PLN14 per kg
Direct labor	3 hours @ PLN18 per hour
Variable overhead	3 hours @ PLN8 per hour

The following activities occurred during the month of October:

Materials purchased	10,000 kilograms at PLN13.60 per kg
Materials used	9,000 kilograms
Units produced	800 units
Direct labor	2,500 hours at PLN19.00 per hour
Actual variable overhead	PLN22,000

The company records materials price variances at the time of purchase.

21. Rax Company's materials price variance would be

- a. PLN 4,000 unfavorable
- b. PLN 4,000 favorable
- c. PLN 1,600 unfavorable
- d. PLN 1,600 favorable

22. Rax Company's materials usage variance would be

- a. PLN 8,400 unfavorable
- b. PLN 8,400 favorable
- c. PLN 5,600 unfavorable
- d. PLN 5,600 favorable

23. Rax Company's labor rate variance would be

- a. PLN 4,300 favorable
- b. PLN 4,300 unfavorable
- c. PLN 2,500 favorable
- d. PLN 2,500 unfavorable

24. Rax Company's labor efficiency variance would be

- a. PLN 4,300 unfavorable
- b. PLN 4,300 favorable
- c. PLN 1,800 unfavorable
- d. PLN 1,800 favorable

25. Who would NOT be responsible for an unfavorable material usage variance caused by poor quality materials?

1. production manager
2. purchasing manager
3. engineering manager
4. human resource manager

A 1 2 3

B 2 3 4

C 3 4 1

D 4 1 2

The following scenario relates to questions 26-30

The Bartek Division produces a component that is used by the West Division. The cost of manufacturing the component is as follows:

Direct materials	PLN 30
Direct labor	PLN 8
Variable overhead	PLN 10
Fixed overhead ^a	<u>PLN 12</u>
Total cost	<u>PLN 60</u>

^aBased on a practical volume of 250,000 components

Other costs incurred by the Bartek Division are as follows:

Fixed selling and administrative	PLN 1,200,000
Variable selling	PLN 4 per unit

The component usually sells for PLN 90 in the external market. The Bartek Division is capable of producing 250,000 components per year; however, only 200,000 components are expected to be sold next year. The variable selling expenses are avoidable if the component is sold internally.

The West Division has been buying the same component from an external supplier for PLN 80 each. The West Division expects to use 40,000 units of the component next year. The manager of the West Division has offered to buy 40,000 units from the Bartek Division for PLN 56 each.

26. The minimum transfer price that the Bartek Division would accept is

- a. PLN 60
- b. PLN 50
- c. PLN 48
- d. PLN 30

27. The maximum transfer price that the West Division would be willing to pay is

- a. PLN 80
- b. PLN 60
- c. PLN 48
- d. PLN 38

28. The effect on firm-wide income if 40,000 components are transferred internally at PLN 56 each instead of purchased from an external supplier at PLN 80 per unit would be a

- a. PLN 1,920,000 decrease
- b. PLN 1,280,000 increase
- c. PLN 960,000 decrease
- d. PLN 960,000 increase

29. **The opportunity cost approach to setting a transfer price would set the minimum transfer price as**
- a. the opportunity cost of the firm as a whole
 - b. the opportunity cost of the selling division
 - c. the opportunity cost of the buying division
 - d. none of the above

30. Which of the following statements is NOT true regarding the opportunity cost approach?

1. The opportunity cost approach identifies the maximum price a selling division would be willing to accept.
2. The opportunity cost approach identifies the minimum price that the buying division would be willing to pay.
3. The opportunity cost approach identifies the minimum price a selling division would be willing to accept.
4. The opportunity cost approach identifies both the minimum and maximum price a selling division would be willing to accept.

A 1 2 3

B 2 3 4

C 2 4 1

D 3 4 1

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.

Question 31.

CD Audio Sp. z o.o. manufactures and sells one type of a portable CD player. The variable cost is estimated to be 115 PLN per unit and the total annual fixed costs are 2 000 000 PLN over a relevant range of outputs up to a maximum production of 25 000 units per year.

The marketing department estimates that each increase in the selling price of 40 PLN per unit results in a decrease in demand of 2 000 units and it is known that at the present price of 400 PLN per CD the demand amounts to 10 000 units per year. The company has budgeted that the production and sales of its product would be 20 000 units next year.

Required:

1. Calculate the contribution margin and operating income at the budgeted level of sales of 20 000 units next year. (2 marks)
2. Determine the production output that will maximize the operating income, the optimum selling price and the amount of this maximum income. (2 marks)
3. Assuming that variable and fixed costs are very likely to increase by 20% and 10% respectively next year, suggest whether and by how much CD Audio should adjust the selling price of its product. The demand function remains the same. (2 marks)
4. Compute the operating income for the next year after the cost increases for the optimum output of production calculated in requirement 3. (2 marks)
5. Identify whether it is worthwhile for CD Audio to spend 200 000 PLN on advertising in order to mitigate negative effects of the increases in costs and to increase demand. Assume that for each successive increase in price of 40 PLN per CD, demand will still be reduced by 2 000

units, but if the selling price were increased to 650 PLN then demand would be zero.

(3 marks)

6. Discuss the limitations of the cost-plus formula. (3 marks)

7. Give three examples of short-term decision making problems. (3 marks)

8. Explain behavioural and implementation issues in decision making (3 marks)

(20 marks)

Question 32.

Fores Ltd. manufactures three products: A, B and C. The monthly production output and sales of the products are as follows:

- Product A: 1 020 units,
- Product B: 2 000 units,
- Product C: 1 600 units.

The company traditionally uses direct machine hours as the basis for applying all manufacturing overhead costs to the products. The total estimated overhead costs for the next month amount to 502 400 PLN.

The management is now considering switching to an activity-based costing system in order to calculate the most accurate unit product costs for the purpose of improving the internal management decision making process. The new activity-based costing system would have four overhead activity cost pools: receiving orders, machine maintaining, processing and quality control.

The appropriate data concerning the estimated overhead costs and predicted activity levels is given below:

Activities	Estimated overhead costs (PLN)	Activity driver	Activity level		
			A	B	C
Receiving orders	32 000	no. of orders	40	68	52
Machine maintaining	288 000	machine hours	3 400	22 200	6 400
Processing	153 000	labour hours	6 400	16 400	11 200
Quality control	29 400	no. of inspection hours	260	300	280

Required:

1. Calculate the predetermined overhead rate under the traditional costing system.
(2 marks)
 2. Calculate the overhead cost per unit of each product under the traditional costing system.
(2 marks)
 3. Discuss the limitations of volume-based approach to cost assignment (3 marks)
 4. Calculate the predetermined overhead rates for all activities under the activity-based costing system. (2 marks)
 5. Calculate each activity overhead cost per unit of every product under the activity-based costing system. (2 marks)
 6. Calculate the overhead cost of each product both in total and per unit under the activity-based costing system. (2 marks)
 7. Discuss the impact of various costing systems on performance. (4 marks)
 8. Explain the essence of target costing. (3 marks)
- (20 marks)**

PERFORMANCE MANAGEMENT

Pilot Demonstration Exam

Answers



Section A	
1.	D ($33.6 \times 500 = 16,800$)
2.	C ($500+2,000+100+200 = 3,700$)
3.	B ($10 - 2 = 8$)
4.	A
5.	C ($11 \times 7,500 = 82,500$)
6.	C (7,300 units)
7.	A
8.	B
9.	A ($1.4 \times 50 = 70$ PLN)
10.	C (83,000)
11.	D ($65,000 - 45,000 = 20,000$)
12.	C
13.	D ($40,000 - 10,000 \times 0.12$)
14.	A
15.	A ($(60 + 30 + 15 + 24) \times 1.3 = 167.7$)

Section B

16.	C (PLN 23,000)
17.	D (PLN 7,000)
18.	C (11.5%)
19.	B
20.	B
21.	B (PLN 4,000 favorable)
22.	B (PLN 8,400 favorable)
23.	D (PLN 2,500 unfavorable)
24.	C (PLN 1,800 unfavorable)
25.	C (only purchasing manager is responsible)
26.	C (PLN 48)
27.	A (PLN 80)
28.	B (PLN 1,280,000 increase)
29.	B
30.	C

Section C

QUESTION 31.

1)

$$\text{Price}(Q) = -0.02Q + 600$$

Contribution margin = PLN 1,700,000

Operating income = (PLN 300,000)

2)

Q=	12 125,00
p(Q)=	357,50
Income(Q)=	940 312,50

3)

$$\begin{aligned} \text{TC}(Q) &= 138Q + 2,200,000 \\ \text{S}(Q) &= -0,02 * Q * Q + 600 * Q \\ \text{OI}(Q) &= -0,02 * Q * Q + 462 * Q - 2200000 \\ \text{OI}' &= -0,04Q + 462 \\ Q &= 11550 \\ \text{P}(Q) &= 369,0 \end{aligned}$$

4)

Income =	468,050
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5)

FC up by	200,000
FC' =	2,400,000
TC(Q) =	138Q + 2,400,000
p(Q) =	-0.02Q + 650
OI(Q) =	-0.02 * Q * Q + 512 * Q - 2,400,000
OI' =	-0.04Q + 512
Q =	12,800
OI =	876,800

6)

1. This method does not take into account the future demand for a product which should be the base before deciding the price of a product and therefore a serious limitation of this method.
2. It also does not taken into account the competitor actions and its effects on pricing of the product, because in today competitive world if one solely depends on cost plus pricing it can lead to failure of company's product in the market.
3. It can result in company overestimating the price of a product because this method include sunk cost and ignores opportunity cost also while calculating cost and there is element of personal bias while deciding the profit margin which is to be added for a product

7)

Examples of short-term decisions making problems:

- Product-mix decisions
- Make or buy decisions
- Accept or reject special order

8)

Behavioral and implementation issues in decision making include:

- Predatory pricing practices
- Replacement of variable costs with fixed costs
- Proper identification of relevant factors

Question 32.

1)

Total estimated
overhead cost =

PLN 502,400

	Total no. of mh	X	Y	Z
machine hours	32 000	3,400	22,200	6,400

Overhead rate= PLN 15.70

2)

	X	Y	Z	total
machine hours	3 400	22 200	6 400	32 000
Overhead	53 380	348 540	100 480	502 400
Output	1020	2 000	1 600	4 620
Unit cost	52.333	174.270	62.80	

3)

ACTIVITIES	Cost of activity	Cost driver	Activity volume	OH rate
Materials handling	32 000	no. of tonnes	160	200
Engineering	288 000	machine hours	32000	9
Processing	153 000	labour hours	34000	4,50
Packaging	29 400	no of order	840	35
TOTAL	502 400	-		

4, 5, 6)

ACTIVITIES	per X	per Y	per Z
Materials handling	8000	13 600	10 400
Engineering	30 600,00	199 800	57 600
Processing	28 800,00	73 800	50 400
Packaging	9 100,00	10 500	9 800
TOTAL	76 500,00	297 700	128 200
Cost per unit	75,00	148.85	80.125

6)

- One major limitation of a traditional volume-based costing system is that it tends to undercost complex low-volume products and overcost high-volume products
- The ABC system presents a more accurate measurement of product costs by tracing overhead consumption

7) Target costing

Target cost = Competitive price – Desired profit

A firm has two options for reducing costs to a target cost level:

1. By integrate new manufacturing technology, using advanced cost management techniques such as activity-based costs, and seeking higher productivity.
2. By redesigning the product or service.