NOVA SCHOOL OF
BUSINESS & ECONOMICS

1202 – Management Accounting

Semester 1 - 2023/2024

Midterm

October 30, 2023

Length: 90 minutes + 30 minutes extra time

Name: _____

Number: _____ Class: _____

The exam is composed of **6** parts.

All parts but part **III** are open questions.

Questions must be answered in the **designated boxes**.

Unclear answers will **not be marked**.

You are required to **show the supporting calculations** to numerical questions, otherwise, they will **not be marked**.

In intermediate calculations, round up to **2** decimals if needed.

Answer sheets should be **kept stapled**.

The exam is close-book and only basic or scientific calculators are allowed.

Good luck!

Student Nr: _____

PART I - (3 Marks)

IKAE, a furniture manufacture, which uses FIFO, has shown the following data regarding year N:

(Amounts in €)	Opening inventory	Closing inventory
Of finished goods	240 000€	?
Of work in progress goods	50 000€	80 000€
Total	**290 000€**	**?**

Manufacturing Costs	Selling Costs	General and Administrative Costs	Financial Costs
780 000€	50 000€	42 500€	22 000€

Movements in the finished goods	Units
Opening Stock	20 000
Production	75 000
Sales	80 000

Assignment:

1.1) Calculate the Changes in Inventories account in the Financial Accounting profit and loss statement.

COGM = MC – ΔWIP = 780 000€ - (80 000€ - 50 000€) = 750 000€

COGM/Unit = 750 000€/ 75 000 = 10€/unit

FG Closing (Units) = 20 000 + 75 000 – 80 000 = 15 000

FG Closing € = 15 000 * 10€ = 150 000€

Δ Inv = ΔFG + ΔWIP = (150 000€ - 240 000€) + (80 000€ - 50 000€) = - 60 000€

In version B:
Sales = 90 000
FG Closing = 5 000 * 10€ = 50 000€
Δ Inv = - 160 000€

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PART II - (4 Marks)

Company Y sells two goods, since 1999: Product A and B. The company is currently studying the benefits of adopting ABC and for that purpose, the information bellow was collected:

	Product A	Product B	Total
Sales (€)	105 000€	70 000€	175 000€
Prime Cost (€)	30 000€	20 000€	50 000€
Maintenance (hours)	100	50	150
Orders (number)	600	400	1 000
Recycling (kilos)	10	90	100

Activity	Description	Cost Driver	Total Cost
Maintenance	To keep machines up and running	Maintenance hours	45 000€
Orders	To order direct materials	Orders made	30 000€
Recycling	To sustainably dispose trash	Kilos of recycling	20 000€

Note: Prime Cost = Direct Materials + Direct Labor

Assignment:

2.1) Calculate the operating profit for product A, knowing that Company Y uses sales revenues as the single allocation base to allocate manufacturing overheads.

SOR = Total Overheads / Allocation Base =

= (45 000€ + 30 000€ + 20 000€) / (175 000€) = 95/175 ≈ 0.54€

Operating Profit = Revenues – COGS = 105 000€ - (30 000€ + 105 000€ * 0.54) = 18 000€

In version B – Product B:

Operating Profit B = Revenues – COGS = 70 000€ - (20 000€ + 70 000€ * 0.54) = 5 000€

2.2) Calculate the operating profit for Product B under ABC.

Maintenance/Mh = 45 000€ / 150 = 300€/Mh

Orders/Order Made = 30 000€ / 1 000 = 30€/order

Recycling/kg = 20 000€ / 100 = 200€/kg

MOH's = 50 * 300€ + 400 * 30€ + 90 * 200€ = 45 000€

Operating Profit = Revenues – COGS = 70 000€ - (20 000€ + 45 000€) = 5 000€

In version B – Product A:

MOH's = 100 * 300€ + 600 * 30€ + 10 * 200€ = 50 000€

Operating Profit = Revenues – COGS = 105 000€ - (30 000€ + 50 000€) = 25 000€

2.3) Based on the concept of cost-benefit, discuss the advantages and disadvantages of both systems and provide a justified recommendation to which system Company Y should adopt.

Mention advantages and disadvantages, such as:

- ABC is more precise but more expensive and complex to implement and maintain
- ABC establishes a cause effect relationship between costs and the activities that actually drive cost
- SOR is simpler to implement, less expensive, but sacrifices some accuracy

Provides a justified recommendation for any of the systems, such as:

- ABC should be implemented given the relative importance of MOH to MC, as to not distort the COGM per product
- SOR should be implemented due to the small number of products, stable product mix and both products generating positive operating results

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PART III - (2 Marks)

3.1) With the traditional costing systems, goods manufactured in relatively small batches and small annual quantities could be:

A) Undervalued

B) Overvalued

C) Correctly valued

D) Ignored

E) Both c) and d) are correct

F) None of the above

3.2) In a factory that manufactures several products and uses total full costing, the wage of the general manufacturing manager can be classified as:

A) Direct cost

B) Period cost

C) Variable cost

D) Product cost

E) None of the above

Question	Version A	Version B
3.1)	**A)**	**A) Undervalued**
3.2)	**D)**	**B) Product Cost**

PART IV - (4 Marks)

Adike is a company that manufactures soccer outfits per order.

For accounting purposes, the company's factory is organized in the following homogeneous cost pools (or cost centers):

- **Cut** (labor hours as the unit of work), in which the materials are cut.
- **Sew** (machine hours as the unit of work), in which the materials are tailored.
- **Cleaning** (labor hours as the unit of work) **–** cleans the factory.
- **Maintenance** (labor hours as the unit of work) - ensures the maintenance and repair of the manufacturing and cleaning equipment.
- **General Manufacturing Overheads –** These costs are allocated every month to all the other cost pools proportionately to their direct costs.

The following information was collected regarding the month of May:

1 – Direct costs (in Euros) of the homogeneous cost pools:

Costs	Cut	Sew	Cleaning	Maintenance	GMO
Miscellaneous costs	300 €	600 €	400 €	250 €	500 €
Wages	2 150 €	950 €	500 €	900 €	-
Depreciation	50 €	750 €	100 €	100 €	-
Other costs	300 €	100 €	80 €	50 €	400 €
Total	**2 800 €**	**2 400 €**	**1 080 €**	**1 300 €**	**900 €**

2 – The activities of the homogeneous cost pools:

Suppliers / Users	Cut	Sew	Cleaning	Maintenance
Cut	-	-	250	100
Sew	-	-	100	200
Cleaning	-	-	-	100
Maintenance	-	-	100	-
Total	700 Lh	750 Mh	450 Lh	400 Lh

Assignment:

4.1) Calculate the total cost of the Cut department, if Adike uses the sequential allocation method.

GMO is allocated proportionally to direct costs.

GMO/DC € = 900€ / (2 800€ + 2 400€ + 1 080€ + 1 300€) ≈ 0,12

% Rendered Services of Maintenance: 100 / 400 = 25% **Close First**

% Rendered Services of Cleaning: 100 / 450 = 22,22%

Sequential Method	Unit of work (UW)	Cut		Sew		Clean		Maintenance		GMO's		
		Lh	700	Mh	750	Lh	450	Lh	400	DC's	8 480	
		Q	V	Q	V	Q	V	Q	V	Q	V	
Direct Costs			2 800		2 400		1 080		1 300		900	
2-Reallocation of the costs of the service centres												Total (UW)
GMO's	DC's	2 800	332,45	2 400	284,96	1 080	128,23	1 300	154,35			7 580
Maintenance	Mh	100	363,59	200	727,18	100	363,59					400
Cleaning	Lh	250	1 122,73	100	449,09							350
Sub-total 2			4 618,77		3 861,23		1 571,82		1 454,35		900,00	
Total unit cost			6,60		5,15		4,49		3,64		0,12	

In Version B:

Compute Sew

4.2) Calculate the cost of the Cleaning Department, if Adike uses the simultaneous equation method.

Simultaneous Equation Method	*Unit of work (UW)*	*Clean*		*Maintenance*		*GMO's*		
		Lh	*450*	*Lh*	*400*	*DC's*	*8 480*	
		Q	*V*	*Q*	*V*	*Q*	*V*	
Direct Costs			1 080		1 300		900	
2-Reallocation of the costs of the service centres								**Total (UW)**
GMO's	DC's	1 080	128,23	1 300	154,35			7 580
Maintenance	Mh	100	456,05					400
Cleaning	Lh			100	369,84			450
Sub-total 2			1 664,28		1 824,19		900,00	
Total unit cost			3,70		4,56		0,12	

$$\begin{cases} C = 1\,080 + 128{,}23 + \dfrac{100}{400} M \\ M = 1300 + 154{,}35 + \dfrac{100}{450} C \end{cases}$$

$$\begin{cases} C = 1664{,}28 \\ M = 1\,824{,}19 \end{cases}$$

In Version B:

Compute Maintenance

PART V - (3 Marks)

FruSyrup is a Sweeteners Producer Company that produces a sugar syrup. To produce the syrup, sugar is heated up in the Heating Department to get the final product.

For every two units of sugar (direct material) that enter the process, one unit of the syrup is produced. However, under efficient conditions, 15% of the production is lost.

The following information was collected regarding the month of January:

	Heating
Materials (€)	40 000€
Labor (€)	30 000€
Overheads (€)	20 000€
Total	**90 000€**

Inputs – Direct Materials (units)	10 000
Outputs – Finishing Goods (units)	4 000
Unit selling price of wastage (€)	1€

- There was no opening or closing stocks of finished goods and work-in-progress.
- All the losses can be sold.

Assignment:

5.1) Knowing that the selling price is 31€, calculate the operating profit of FruSyrup.

Expected Production = 10 000/2 * (100% - 15%) = 4 250 Units

Normal Losses = 10 000/2 * 15% = 750 Units

Abnormal Losses = Expected Production – FG Output = 4 250 – 4 000 = 250 Units

COGM = MC – Expected Value of Normal Losses = 90 000€ - 1€ * 750 = 89 250€

COGM/Unit = COGM/Expected Production = 89 250€/ 4 250 = 21€/unit

Operating Profit = (31€ - 21€) * 4 000 + (1€ - 21€) * 250 = 35 000€

In Version B:

Selling Price = 41€

Operating Profit = (41€ - 21€) * 4 000 + (1€ - 21€) * 250 = 75 000€

Student Nr: _____

PART VI - (4 Marks)

Early Company is a clock manufacturer that produces a single alarm clock model. The CEO of **Early Company** hired you to replace the prior CFO, after finding out that he **changed the costing system** on the 1st of January 2021 without prior consent.

After a quick chat with you, the CEO delivered to you the P&L's of September 2020 and 2021, and some additional information relating to the two months in question. Additionally, it is known that **Early Company** uses **LIFO** as the inventory valuation method.

P&L	**September 2020**	**September 2021**
Sales	32 000€	28 000€
Cost of sales + Under-recovery of overheads	(29 600€)	(24 520€)
Gross profit	2 400€	3 480€
Non-manufacturing costs	(5 000€)	(2 150€)
Profit before taxes	**(2 600€)**	**1 330€**

	September 2020	**September 2021**
Sales (units)	800	700
Actual Production (units)	1 000	1 000
Practical capacity of production (units)	1 250	1 250
Unit variable manufacturing cost	22€	22€
Manufacturing fixed costs	12 000€	12 000€
Non-Manufacturing fixed costs	400€	400€
Unit Non-Manufacturing variable costs	2,5€	2,5€
Unit selling price	40€	40€

Assignment:

6.1) Identify the costing systems used in 2020 and in 2021. Justify your answer.

Variable Costing in 2020:

COGS = MVC Unit * Units Sold = 22€ * 800 = 17 600€

UROH = MFC = 12 000€

COGS + UROH = 17 600€ + 12 000€ = 29 600€

Full Costing Based on Practical Capacity in 2021:

COGM = MVC Unit * Production + MFC * (Production / Practical Capacity) =

= 22€ * 1000 + 12 000€ * (1000 / 1250) = 31 600€

COGM/Unit = 31 600€/1000 = 31.6€

COGS = COGM/Unit * Sales = 31.6€ * 700 = 22 120€

UROH = MFC * (1 – Production / Practical Capacity) = 2 400€

COGS + UROH = 22 120€ + 2 400€ = 24 520€

6.2) The CEO rumbled to you, “I knew something changed when I saw declining sales, and increase in profits”. Explain to the CEO the source of the recorded profit and provide him with the profit that would be obtained under the previous costing system.

Given that Sales < Production, Full Costing based on Practical Capacity yields higher profits compared to Variable Costing, as it capitalizes part of the FC in the inventory, by assigning it to products, whereas under VC all MFC are a period cost, recognized in the P&L.

Under Variable Costing:

COGS = 22€ * 700 = 15 400€

UROH = 12 000€

Sales	28 000€
COGS + UROH	(27 400€)
Gross Margin	**600€**
NM Costs	2 150€
PBT	**(1 550€)**

or

MFC in the P&L under VC: 12 000€

MFC in the P&L under FCPC: 2400€ + (31.6 – 22€) * 700€ = 9 120€ (*Question 6.1*)

ΔMFC in P&L (VC – FCPC) = 12 000€ - 9 120€ = 2 880€

∏ VC = ∏ FCPC - ΔMFC in P&L (VC – FCPC) = 1 330€ – 2 880€ = - 1 550€