UNIVERSITY EXAMINATIONS

UNIVERSITEITSEKSAMENS

UNISA university of south africa

ACN203S

May/June 2012

COST ACCOUNTING AND CONTROL

Duration : 2 Hours

100 Marks

EXAMINERS :

FIRST :	MRS Y REYNEKE	MISS JM VAN ZYL
SECOND :	MS S BUCHNER	MR RK NZHINGA

Use of a non-programmable pocket calculator is permissible.

This paper consists of **6** pages.

N.B.:

1. This paper consists of FIVE (5) questions.
2. All questions must be answered.
3. Basic workings, where applicable, must be shown.
4. Ensure that you are handed the correct examination answer book (blue for accounting) by the invigilator.
5. EACH QUESTION ATTEMPTED MUST BE COMMENCED ON A NEW (SEPARATE) PAGE.
6. The required percentage to pass this module is 50%.

PROPOSED TIMETABLE:

Question	Subject	Marks	Time in minutes
1	Overheads	20	24
2	Standard costing	20	24
3	Process costing systems	20	24
4	Direct and absorption costing	20	24
5	Cost volume profit-analysis	20	24
		100	**120**

QUESTION 1 (20 marks, 24 minutes)

Swift Sailing Ship Manufacturers (Pty) Ltd manufactures ships. The company has two manufacturing cost centres, Indian and Atlantic, and two service cost centres, Pacific and Arctic.

The company uses the following bases to allocate overheads among the various cost centres:

	Indian	**Atlantic**	**Pacific**	**Arctic**
Floor area – ('000 m²)	800	650	100	50
Number of employees	75	65	10	10
Budgeted direct labour hours	9 000	6 500	-	-
Actual direct labour hours	8 500	6 400	-	-
Indirect material – direct	180 000	60 000	-	-
Number of inspections	70	70	10	10

The budgeted overhead expenditure for the month ended 31 August 2012 is as follows:

	R
Factory building insurance	400 000
Quality control	50 000
Canteen (factory)	100 000
Indirect labour: Indian	90 000
Indirect labour: Atlantic	60 000
Indirect material	240 000

Additional information:

- Service cost centres' costs are allocated to manufacturing- and service cost centres on the following sequence and bases:
  First Arctic – 2; 2; 1
  Second Pacific – Floor area ('000 m²)
- Overhead allocation rates are based on **direct labour hours.**

REQUIRED:

For the month ended 31 August 2012, calculate the following (Round all your answers to the nearest Rand):

a) Primary and secondary allocations of overheads (13)
b) Overhead allocation rate for Indian. (1½)
c) Overhead allocation rate for Atlantic. (1½)
d) Calculate the applied overheads for Indian. (2)
e) Calculate the applied overheads for Atlantic. (2)

QUESTION 2 (20 marks, 24 minutes)

Namib Leather Ltd purchases leather which is cut into small strips. These strips are then sewn together to make car seat covers.

The **standard** variable cost per seat cover is as follows:

Leather (2 metres @ R28 per metre)	R56,00
Labour (3 hours @ R18 per hour)	R54,00
Manufacturing overheads	R30,00
Total standard variable cost per unit	R140,00

Additional information:

- The company budgeted to manufacture 12 000 units in December 2011.
- Variable manufacturing overheads vary with hours worked.

Actual results for December 2011 were as follows:

Total leather cost @ R32 per metre	R658 560,00
Total labour cost (30 285 hours)	R529 987,50
Total variable manufacturing overheads	R300 522,00
	R1 489 069,50

Total actual variable cost per unit	R149,50
Actual units manufactured during December 2011	9 960

Round off all variances to the nearest Rand.

REQUIRED:

a) Calculate the actual quantity of leather used in December 2011. (1)
b) Calculate the material purchase price variance. (2½)
c) Calculate the material quantity variance. (2½)
d) Calculate the total material variance. (1)
e) Calculate the labour rate variance. (2½)
f) Calculate the labour efficiency variance. (2½)
g) Calculate the total labour variance. (1)
h) Calculate the variable manufacturing overheads rate variance in respect of overheads that vary with hours worked. (2½)
i) Calculate the variable manufacturing overheads efficiency variance in respect of overheads that vary with hours worked. (2½)
j) Calculate the total variable manufacturing overhead variance. (1)
k) Calculate the total of all the variances. (1)

QUESTION 3 (20 marks, 24 minutes)

TFH (Pty) Ltd manufactures a multi-vitamin in a single process and uses a process costing system.

The following information is available for the financial year ended 31 December 2011:

Cost of opening work-in-process on 1 January 2011	**25 000 units**
- material	R375 000
- conversion costs (24% completed)	R50 000
Units put into production during 2011	**165 000 units**
Units completed and transferred 2011	**120 000 units**
Cost of material added during 2011	R2 640 000
Conversion costs 2011	R1 480 000
Closing work-in-process on 31 December 2011 (90% completed with regard to conversion costs)	**40 000 units**

Additional information:

- TFH (Pty) Ltd uses the weighted average method of stock valuation.
- Normal wastage takes place when the process is 80% complete and is estimated to be 15% of the units that reach the wastage point.
- Material is added at the beginning of the process and conversion costs are incurred evenly throughout the process.

REQUIRED:

1. Prepare the following statements for TFH (Pty) Ltd for the 2011 financial year:

(a)	Quantity statement	(6)
(b)	Production cost statement (Round off cost per equivalent unit to two decimal places)	(3)
(c)	Cost allocation statement	(6)

2. Calculate the following for 2011 (based on the above information, but with the assumption that TFH (Pty) Ltd uses the first-in-first-out method **(FIFO method)** of stock valuation and that **losses occur when the process is 95% complete)**:

(a)	Normal loss in units.	(1)
(b)	Equivalent units for normal loss in terms of material.	(1)
(c)	Equivalent units for normal loss in terms of conversion costs.	(1)
(d)	Rand value of the normal loss (assume equivalent cost per unit of R15,64 for material and R8,25 for conversion costs).	(2)

QUESTION 4 (20 marks, 24 minutes)

Luvuvhu CC, manufactures a single product (circuit boards) and has provided the following information for December 2011:

Selling price per unit	R100
Units in opening stock	Nil
Units manufactured	8 760
Units sold	8 400
Units in closing stock	?
Variable costs per unit:	
Direct materials	R24,00
Direct labour	R36,00
Variable manufacturing overhead	R 8,40
Variable selling and administration costs	R13,20
Fixed costs:	
Fixed manufacturing overheads	R78 840
Fixed selling and administration costs	R25 200

REQUIRED:

(a) Calculate the **cost per unit** when valuing closing stock for December 2011 using the **Direct costing** method. (3)

(b) Calculate the **cost per unit** when valuing closing stock for December 2011 using the **Absorption costing** method. (3)

(c) Calculate the **total period costs** for December 2011 using the **Direct costing** method. (3)

(d) Calculate the **closing stock** v**alue** for December 2011 using the **Absorption costing** method. (3)

(e) Prepare an income statement for December 2011 using the **Direct costing** method. (8)

QUESTION 5 (20 marks, 24 minutes)

Flycatcher (Pty) Ltd specialises in the manufacturing of a unique plastic toy, Mayfly. This was the only toy that Flycatcher manufactured and sold during 2011.

Flycatcher's fixed cost for the year 2011 was R250 000. Variable cost per Mayfly-toy was R125 in 2011.

For the year 2012, management has decided to prepare a sensitivity analysis as cost increases are expected in 2012 and management needs to determine whether it will be profitable to keep on selling Mayfly.

It is estimated that the Mayfly-toy will be sold at R400 per toy in 2012. Management also estimated that both the variable cost per Mayfly-toy and the fixed cost of Flycatcher will increase with 20% from 2011.

If the calculations show that the Mayfly-toy will no longer be profitable to sell, Flycatcher will develop a new toy, namely Bumblebee.

REQUIRED:

(a) Calculate the marginal income per Mayfly-toy for 2012, taking into consideration the expected price changes as estimated by management. (2)

(b) Taking the expected changes into consideration, how many Mayfly-toys will have to be sold in 2012 if the company wants to break-even? (3)

(c) How many Mayfly-toys have to be sold in 2012 if the company wants to make an after-tax profit of R360 000 for 2012? (Assume a tax rate of 28%) (5)

(d) Given an expected sales volume of 2 000 toys and a break-even volume of 1 200 toys, calculate the **margin of safety**. (2)

(e) Given an expected sales volume of 2 000 toys and a break-even volume of 1 200 toys, calculate the **margin of safety ratio**. (2)

(f) What would the selling price of a Bumblebee-toy be if the break-even quantity for this toy is 200 units, the fixed cost is R50 000 and the variable cost per unit is only R50? (4)

(g) Evaluate whether the following statements regarding cost-volume-profit analysis is true/false:

(i) Fixed cost = Sales – Variable cost – Profit (1)

(ii) Minimum subsistence turnover in value = $\frac{\text{Fixed cost + Planned profit}}{\text{Marginal income ratio}}$ (1)

MEMO:

QUESTION 1

(a) Primary & secondary allocation:

Overhead	Basis	Production Indian	Atlantic	Service Pacific	Arctic	TOTAL
Insurance	Floor area - m²	200,000.00	162,500.00	25,000.00	12,500.00	400000
Quality control	No. of inspections	21,875.00	21,875.00	3,125.00	3,125.00	50000
Canteen	No. of employees	46,875.00	40,625.00	6,250.00	6,250.00	100000
Indirect labour	given	90,000.00	60,000.00			150000
Indirect material	given	180,000.00	60,000.00			240000
		538750	345000	34375	21,875.00	940000
Allocation of Arctic		8750	8750	4375	-21,875.00	
		547500	353750	38750		
Allocation of Pacific		21,379	17,371	-38750		
Round to nearest Rand		**568879**	**371121**			(13)

(b) & (c) Calculation of overhead allocation rates:

	Indian	Atlantic	
Budgeted overheads	568879	371121	
Budgeted labour hours	9000	6500	
Allocation rate	63.20881226	57.09549072	(1½ each)
Round to nearest Rand	**63**	**57**	

(d) & (e) Applied overheads

Actual hours x overhead rate	**535500**	**364800**	(2 each)

QUESTION 2:

a) R658 560 / 32
= 20 580 metres

b)- *Material price variance*

Actual price paid = R32 (AP x AQ)	for the actual quantity of material (20 580 metres) purchased and used to manufacture 9 960 units	Standard price allowed = R28 (SP x AQ)
= 20 580 metres x R32 per metre = R658 560		= 20 580 metres x R28 per metre = R576 240
	Variance = R82 320(u)	

c)- *Material quantity variance*

Actual quantity of material purchased and used (= 20 580 metres) (AQ x SP)	at the standard material purchase price (R28 per metre)	Standard quantity of material allowed for actual production (9 960 units x R2= 19 920 metres) (SQ x SP)
= 20 580 metres x R28 per metre = R576 240		= 19 920 metres x R28 per metre = R557 760
	Variance is R18 480(u)	

d)- *Total material variance*

(18 480 + 82 320) = 100 800(u)

e) *-Labour rate variance*

Actual labour rate paid per hour (R17,50 (529 987,50/ 30 285) per hour) (AR x AH)		Standard labour rate per hour (R18 per hour) (SR x AH)
	for the actual number of hours (30 285) worked to manufacture 9 960 units	
= 30 285 hours x R17,50 per hour = R529 987,50		= 30 285 hours x R18 per hour = R545 130
	Variance = R15 143(f)	

f)-Labour efficiency variance

Actual hours worked (30 285 hours) (AH x SR)		Standard hours allowed for actual production (9 960 units x 3 hours per unit) (SH x SR)
	at the standard labour rate (R18 per hour) to manufacture 9 960 units	
= 30 285 hours x R18 per hour = R545 130		= (9 960 units x 3 hours per unit) x R18 per hour = R537 840
	Variance = R7 290(u)	

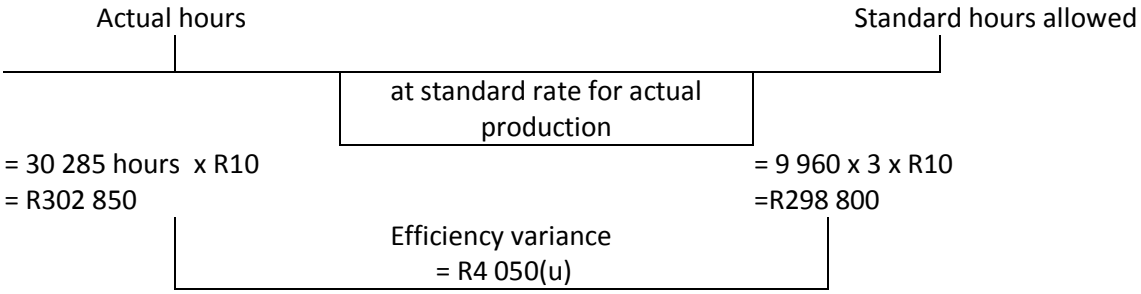
g)*Total labour variance*

(15 143 – 7 290,00) = 7 853(f)

h) *-Overhead rate variance*

Actual variable manufacturing overheads		Standard variable manufacturing overheads
	for actual hours worked	
		= Actual hours x standard overhead rate = 30 285 hours x R30 / 3 per hour = 302 850
= R300 522		
	Variance = R2 328(f)	

i)-*Overhead efficiency variance*



j) -*Total Overhead variance*

2 328 – 4 050 = 1 722(u)

k) Total variances

Material	100 800(u)	Answer in (d)
Labour	7 853(f)	Answer in (g)
Overheads	1 722(u)	Answer in (j)
	94 669(u)	

QUESTION 3

1. (a) Quantity statement

			Equivalent production			
Input	**Details**	**Output**	**Material**		**Conversion**	
Units		**Units**	**Units**	**%**	**Units**	**%**
25 000	Work-in-process (1/1)					
165 000	Put into production					
	Completed and transferred	120 000	120 000	100	120 000	100
	Spoilage:					
	Normal	28 500①	-	-	-	-
	Abnormal	1 500②	1 500	100	1 200	80
	Work-in-process (31/12)	40 000	40 000	100	36 000	90
190 000		190 000	161 500		157 200	

(6)

Notes:
① 190 000 x 15% = 28 500
② Balancing figure

(b) Production cost statement (Round off costs per equivalent unit to two decimal places)

	Total	Material	Conversion
Opening WIP	425 000	R375 000	R50 000
Current production	4 120 000	R2 640 000	R1 480 000
Total	4 545 000	R3 015 000	R1 530 000
Equivalent units from QS		161 500	157 200
Equivalent cost per unit	**R28,40**	**R18,67**	**R9,73**

(3)

(c) Cost allocation statement

Completed and transferred	3 408 000
Material (120 000 x 18,67)	2 240 400
Conversion costs (120 000 x 9,73)	1 167 600
Abnormal loss	39 681
Material (1 500 x 18,67)	28 005
Conversion costs (1 200 x 9,73)	11 676
Work-in-process 31 December 2011	1 097 080
Material (40 000 X 18,67)	746 800
Conversion costs (36 000 X 9,73)	350 280
Total costs allocated	4 544 761
Rounding difference	239
Total costs to be allocated as per production cost statement (see (b))	4 545 000

(6)

2. (a) [190 000 – 40 000] x 15% = 22 500 (1)

(b) 22 500 x 100% = 22 500 (1)

(c) 22 500 x 95% = 21 375 (1)

(d) (22 500 x 15,64) + (21 375 x 8,25)
= 351 900 + 176 344 (or 176 343,75)
= R528 243 (or 528 243,75) (2)

QUESTION 4:

(a) **Unit product costs** for December 2011 using **Direct costing** method:

Direct materials	R24,00
Direct labour	R36,00
Variable manufacturing overhead	R 8, 40
	R68,40

(b) **Unit product costs** for December 2011 using **Absorption costing** method:

Direct materials	R24,00
Direct labour	R36,00
Variable manufacturing overhead	R 8, 40
Fixed manufacturing overhead (R78 840/ 8 760)	R 9,00
	R77,40

(c) **Total period costs** for December 2011 using **Direct costing** method:

Variable selling and administration (8 400 x R13,40)	R110 880
Fixed manufacturing overheads	R 78 840
Fixed selling and administration	R 25 200
	R214 920

(d) **Closing stock** for December 2011 using **Absorption costing** method.

Units manufactured	8 760
Unit product costs (Absorption costing)	R77,40
Total manufacturing costs	R678 024
Units in closing stock (8 760 – 8 400)	360
Closing stock (360 / 8 760 x R678 024)	R27 864

e. Income statement for December 2011 using **Direct costing** method

	R
Sales (8 400 x R100)	840 000
Less: Variable cost of sales	(574 560)
Opening stock	-
Variable manufacturing costs (8 760 x R68,40)	599 184
Less: closing stock (360 x R68,40)	(24 624)
	265 440
Less: Variable selling and administration (8 400 x R13,20)	(110 880)
Marginal Income	154 560
Less: Fixed costs	(104 040)
Fixed manufacturing overheads	78 840
Fixed selling and administration	25 200
Net profit	50 520

QUESTION 5: **[20]**

(a) Marginal income per Mayfly-toy

= Sales – variable cost

= R400 – (R125 x 1.2) OR R400 – R150

= R250 per Mayfly-toy

(b) Break-even quantity Mayfly toys

$$\text{Break-even volume for 2012} = \frac{\text{Total fixed cost}}{\text{Marginal income per unit}}$$

$$= \frac{\text{(R250 000 x 1.2)}}{\text{R250 (answer in (a))}} \quad \text{OR} \quad \frac{\text{R300 000}}{\text{R250}}$$

= 1 200 Mayfly toys

(c) Mayfly-toys sold in order to make an after-tax profit of R360 000.

$$\text{Trips sold for target profit} = \frac{\text{Fixed cost + target pre-tax profit}}{\text{Marginal income per trip}}$$

$$= \frac{\text{(R250 000 x 1.2) + (360 000 / 0.72)}}{\text{R250 (answer in (a))}} \quad \text{OR} \quad \frac{\text{R300 000 + R500 000}}{\text{R250}}$$

= 3 200 Mayfly toys

(d) Margin of safety

Margin of safety = Sales quantity – Break-even quantity

= 2 000 – 1 200

= 800

(e) Margin of safety ratio

$$\text{Margin of safety ratio} = \frac{\text{Sales quantity – Break-even quantity}}{\text{Sales quantity}} \times \frac{100}{1}$$

$$= \frac{\text{2 000 – 1200}}{\text{2 000}} \times \frac{100}{1}$$

= 40%

(f) Selling price per unit of toy Bumblebee

$$\text{Break-even volume for 2012} = \frac{\text{Total fixed cost}}{\text{Selling price per unit} - \text{Variable cost per unit}}$$

Let Selling price per unit be X

$$200 = \frac{50\,000}{\text{Selling price per unit}(X) - 50}$$

$$200\,[\text{Selling price per unit}(X) - 50] = 50\,000$$

$$(200)(X) - 200(50) = 50\,000$$

$$200X - 10\,000 = 50\,000$$

$$200X = 50\,000 + 10\,000$$

$$200X = 60\,000$$

$$X = 300$$

(g) TRUE/FALSE

i. TRUE

ii. TRUE