MAC2601 EXAM PACK

PAST QUESTIONS AND SOLUTIONS

MAC REVISION STUDY PACK

TOPIC 1: NATURE AND BEHAVIOUR OF COSTS

(1) Manufacturing cost/ Production cost

Manufacturing costs - costs incurred in the manufacturing process of a product.

- Direct + Indirect cost = Manufacturing cost
- Direct cost = Direct Material + Direct Labour
- Total Direct cost = Prime cost
- Conversion cost = Direct Labour + Manufacturing overheads
- Indirect cost = Indirect material + Indirect Labour
- Total Indirect cost = Overheads

Direct cost – costs directly linked to the product.
Indirect cost – costs indirectly linked to the product

Manufacturing
Total cost = variable cost + fixed cost

- **Variable cost** – costs that vary with production e.g. material costs
- **Fixed cost** – costs that are constant throughout the manufacturing period e.g. Rent.
- **Semi variable cost** – cost that have both elements variable element and fixed element e.g. Telephone bill

Non Manufacturing cost / Period costs
Non Manufacturing cost – costs incurred after the manufacturing process

a. Marketing cost – costs related to the sale and distribution of the final product.
b. Administrative costs – costs incurred in directing and controlling the organization.

Splitting – fixed from variable cost

Methods used

- High low method
- Linear equation
- Scatter diagram
- Simple regression analysis / least squares methods

We will concentrate on the high low method
e.g.

Observations	No. of Units	Total overhead cost
1	800	105 000
2	650	95 000
3	750	95 000
4	900	120 000

1 step - identify the two points highest level and the lowest level and calculated the differences.

High	900	120 000
Low	650	95 000
	250	**25 000**

2. Calculate the variable rate

$= \frac{change\ in\ R}{change\ in\ Units}$ $\frac{25\,000}{250}$ = R100/m

Variable cost after producing 900 units and 900 x 100 = R90 000

3. Calculating fixed cost

Total cost = fixed cost + variable cost.
120 000 = fixed cost + 90 000 (900x100)
120 000 = f x d cost + 90 000
120 000 – 90 000 = f x d COH
30 000 = FX d cost

Example

The total cost of production is R25 000 for 6 000 units while the cost increases to R30 000 when producing 8 000 units.
The fixed and variable elements are calculated as follows:

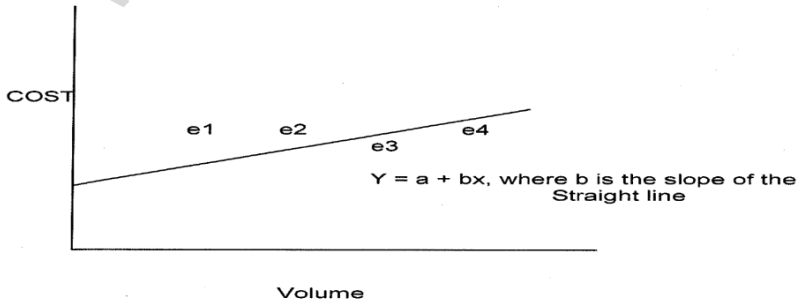
	Volume	**Cost**
High	8 000	30 000
Low	6 000	25 000
	2 000	5 000

The variable cost element is 5000 ÷ 2000 = R2,50

The fixed cost is

Total cost	30 000
Variable cost (8000 x 2,50)	20 000
	10 000

The least squares method



In the case of the least squares method the straight line is fitted in such a way as to minimise the sum of the squares of the distance between the various points on the line.

The equation of the straight line is:

Y = a = bx

Where: y = the dependent variable
a = the intersection on the y axis (fixed cost element)
b = the slope of the line (variable cost element)
x = independent variable

Hence, from the general equation the summation of the above would be:

$\Sigma y = an + b\Sigma x$

$\Sigma xy = a\Sigma x + b\Sigma x^2$

The above equations are solved simultaneously to find the values for a and b.

n	x	y	x^2	xy
1	7	247	49	1729
2	10	270	100	2700
3	11	278	121	3058
4	10	271	100	2710
5	8	257	64	2056
6	6	235	36	1410
7	11	280	121	3080
8	12	287	144	3444
9	11	277	121	3047
10	9	265	81	2385
	95	2667	937	25619
	$\Sigma x = 95$	**$\Sigma y = 2667$**	**$\Sigma x^2 = 937$**	**$\Sigma xy = 25619$**

Hence, substitute the values from the above table in the equations:

$\Sigma y = an + b\Sigma x$

$\Sigma xy = a\Sigma x + b\Sigma x^2$

$2667 = 10a + 95b$ ..... (1)
$25619 = 95a + 937b$..... (2)

(1) x 9,5 $\Rightarrow$ $25336,5 = 95a + 902,5b$ ..... (3)

(2) – (3) $\Rightarrow$ $282,5 = 34,5b$

b = 8,19

a = 188,90 by substituting b = 8,19 in (1)

Hence, **y = 188,90 + 8,19x**

Cost Volume – profit analysis
It investigates the change in profit that from changes in activity levels
Selling price per unit
Variable cost per unit
Total fixed costs

NB: Assumptions of the cost CVP analysis

- Selling price per unit in consultant unless stated.
- All cost is linear and can be accurately dividend into variable and fixed elements.
- Variable costs are constant per unit, where as fixed cost, we content in total over the relevant range.
- Inventory levels do not change –
- CVP. Analysis applies to the relevant range only.
- Relevant range – activity levels within which the organization normally operates and for which cost and remains behavior are known and can be predicted.

Formulas
Contribution = sales - total variable costs

Contribution ratio = $\frac{contribution}{sales}$ x 100 %

Breakeven Point

- Point where income is equal to expenses i.e. profit is zero
- Contribution = total fixed cost

Can be expressed in units or value (Rand value)

BEP in units = $\frac{total\ fixed\ costs}{contribution\ per\ unit}$

Contribution per units = selling price/unit – variable cost per unit

BEP in value = $\frac{total\ fixed\ costs}{contribution\ ratio}$

NOTE: BEV = BE units x selling price per unit

BE units = $\frac{BE\ value}{selling\ price\ per\ unit}$

Margin of safety (MOS)
Amount, or number of units or percentage by which sales revenue may decline before incurring a loss.

Margin of safety
In value = total sales – breakdown sales
In units = total sales (units) – break even sales units

Margin of safety Ratio C

Mos ratio (units) = $\frac{total\ sales\ units - breakeven\ sales\ units}{total\ sales}$ x 100 %

Mos ratio value = $\frac{margin\ of\ safety\ in\ value}{total\ sales\ value}$ x 100 %

Targeted Profit Analysis

Used to determine the sales value that will produce a certain net profit.
NB. If you understand bep it should be easier to remember the following formulas and also calculating.

Target sales

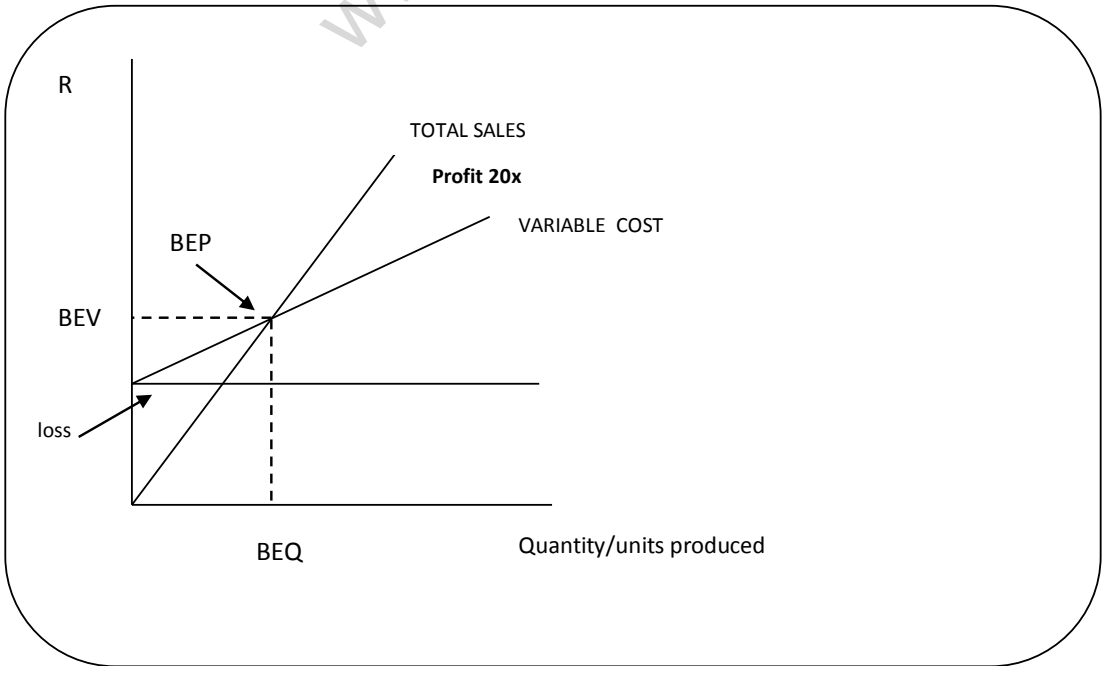
In value = $\frac{fixed\ cost + expected\ profit}{contribution\ ratio}$

In units = $\frac{fixed\ costs + expected\ profit}{contribution\ per\ unit}$

Key important things to note in the effect of price and changes on breakeven point.

- When sales increase it would be due to increase in selling price/unit or increase in units sold.
- Increase in selling price limit – no effect on production cost.
- Increase in sales volume - variable cost are affected , they have to be increased in the same proportion (remember the nature of variable cost and cvp assumption)

BEP Graph



Topic 3

Material, Labour, Overhead

Material
Physical materials converted in products during the manufacturing process (direct material, indirect materials, and other consumables used by the organization).

Reasons for holiday inventory

Transaction motive – holding inventory for day to day use in production process or for sales, where the supplier might not be able to supply at short notice.

Precautionary motive – holding extra inventory when future demand is uncertain.

Speculative motive – holding more or less inventory than usual because a change in the supplier's price is anticipated.

Carrying and ordering cost
Carrying / holding cost – relevant costs of keeping inventory on the organization's premises until used and includes handling costs and storage cost.

Average inventory = $^1/_2$ x order size

Average wage per day = $\frac{order\ size}{order\ internal}$

Ordering costs
Relevant cost of ordering Inventory and may include delivery and transport costs, administrative cost of preparing and processing the order.

N3 Quantity to order a t a given time should therefore be determined by balancing the following factors.
Inventory carrying costs
Ordering cost

The order Quantity at which annual carrying and ordering costs are minimized is the EOQ.

NB. EOQ has nothing to do with economies of scale.

Determining EOQ

(1) Tabular Method

Annual demand for is 2400 units
Variable cost of placing an order is R25
Variable cost of carrying one unit f or one year is R3.

Order Qnty	50	50	200	300	800	1200	2400
Number of Orders Demand/Order Qnty	48	16	12	8	3	2	1
Average Inventory / Order Qnty/2	25	75	100	1500	400	1600	1200
Relevant annual cost	R	R	R	R	R	R	R
Ordering cost No. of orders x R25	1200	400	300	200	75	50	25
Carrying cost	75	225	300	450	1200	1800	3600
Total	1275	625	600	650	1275	1850	3625

Therefore: EOQ = 200

Average Inventory $^{200}/_{2}$ = 100 units

Number of orders $^{2400}/_{200}$ = 12

Fomular Method

EOQ = $\frac{\sqrt{2uc}}{H+(PXi)}$

2 = a constant
C = variable cost of placing an order.
U = annual usage / demand
H = variable holding cost (excl interest) per annum per unit
I = interest rate or required return – (use only w hen given)
P = Purchase price per unit – use only when provided

Question

A company has collected the following data for a given year EOQ in units

EOQ in units	5000
Total variable cost to place purchase orders for the year	R10 000
Variable cost to place one order	R50
Variable cost to carry one unit for 1 year	R4

Required

- What is the annual usage in units?
- Calculate the total annual variable carrying costs based on the EOQ.
- Assuming are ordered in lots of 50 000 units. (batches)
  What would be the implication be for variable costs?

Solution

Annual usage

Total number of orders = $\frac{annual\ order\ cost}{cost\ to\ place\ 1\ order}$

= $\frac{10\ 000}{50}$ = 200

Annual demand number of order x EOQ

200 X 5000 = 1 000 000 units

Total annual variable carrying cost

$5000/_2$ x 4 = R10 000

(c) If orderly in lots of 50 000 units

Orderly costs would be $\left(\frac{1\ 000\ 000}{50\ 000}\right)$ x 50	1000
Carry cost 2 x 4	100 000
Total cost	101 000

Total cost	R101 000
Less orderly	10000
Carrying cost	10000
Difference	81000

Increase of R81 000

Labour

Types of remunerations

Remunerations
Is the amount an employer pays to an employee or on behalf of an employee for services rendered in terms of the employment contract.

Fixed monthly salary – employee receives a fixed salary regardless of the quantity of work done or spent on it.

The time wage system – employee is paid in accordance with the number of how is that he /she works not based on performance (hours worked x hourly rate (basic)).

Piece – wage system – employee paid for the work he/she has done and not according to the time spent on it payment is based on output.

(Units produced x basic rate/unit)

Payroll terms

Gross remuneration – amount earned by the employee for the hours worked, includes overtime wages, allowances, bonus.

Overtime premium – an additional amount paid over and above the normal rate / time
Taxable income – gross remuneration remaining after deducting any contribution by the employee to any pension fund.

Cost to company – total amount expended by the employer to and on behalf of the employee.

NB Note Activity is 1 and Activity 5.2 in the study guide

Labour Recovery rate
Budgeted Labour recovery rate – expected labour cost per hour.

$$= \frac{total\ budgeted\ \ annual\ cost}{total\ budgeted\ annual\ productive\ hours}$$

Clock hours - the hours the employee clock in to b on the premises.

Idle time – the time when the employee is clocked in but not working owing to smoke breaks, tea , lunch etc.

Productive work hours – the hours that the employee is expected to be physically working in the production process or on jobs. These correspond to job card hours.

Question

Ezakheni Ltd is a small business that manufactures computer stands. It is situated in KZN. The business wishes to determine the available productive time to be used in the calculation of the hourly recovery rate for the forth coming year. Nakiwe Mkhwanazi the business's wages clerk prepared the following wage summary for Mike Mvelase, who works at the assembly department.

Normal wage rate	R15 / hour
Holiday bonus	R4 800

Ezakheni Ltd makes the following contributions.
16% of normal wage (including vocation pay) to the pension fund.
14% of normal wage (including vocation pay) to the medical aid fund.

Additional Information

- The company operates on a 45 hour week (Mon – Friday) for 52 weeks a year.
- Vocation leave is 20 work days for employee annually. There are 10 paid public holidays per year.
- Idle time makes up 5% of available clock time.

Required
Calculate the following:

a) Annual productive work hours
b) The normal annual wage cost.
c) The total annual labour cost.
d) The productive work hour labour recovery rate.

(b) Annual Productive Hours

Number of clock hours in a year 45 x 52	2340
Less Public holidays 10 days x 9 hours	90
Less vacation hours 20 days x 9	180
	2070
Total clock hours available for production	
Less Idle the 2070 x 5%	103.5
Annual productive hours	**1966.5**

Normal annual wage cost	
Number of weeks in a year	52 wks
Less vacation	4wks
Actual working weeks	**48wks**

Normal wage 48 weeks x 45 hrs x R15 = R32 400

(C) Total annual Labour cost	32400
Annual normal wage	2700
Vocation pay 15 x 180 hrs	35100
	4800
Pension fund 35 100 x 16%	5616
Medical aid R35 100 X 14%	4914
Total annual labour costs	**50 430**

(d) Labour Recovery Rate

$$\frac{Total\ annual\ labour\ cost}{annual\ productive\ hours}$$

$$\frac{R50\ 430}{1\ 966.5}$$

= R25, 64 per productive operating hour

Overheads

Total Indirect cost

Applied manufacturing overhead

Actual overheads, these are the actual overheads costs incurred during a period.
Budgeted overheads, estimated overhead cost before or at the beginning of a financial year.
Applied overheads, These are the total overheads allocated to the cost of the products based on the predetermined, or recovery rate.
For each actual produced a budgeted rate will be assigned, thus accounting for the total applied overheads.

Overhead recovery rate - $\frac{Budgeted\ \ manufacturing\ overhead\ \ cost}{apropriate\ \ basis}$

Under or over applied overheads

Applied overheads < actual overheads – under application
Applied overheads > actual overheads – over application

Application of the factory overhead

When a product is completed, the accumulated costs in WIP are transferred to the finished goods account. The amount transferred is the sum of the three costs of production viz, direct material, direct labour and factory overheads. The factory overheads are difficult to determine as the product must first be completed before being costed. Thus an easier method had to be found.

In practice, all the factory overhead costs are estimated for budgetary purposes. In this way the cost accountant determines a factory overhead application rate. Assume that management budgets for R36 000 factory overhead costs and estimates that the total labour hours will be R6 000, the factory overhead rate is determined as follows:

Factory overheads

Labour hours

= R36000 ÷ 6000

= R6 per labour hour

Machine hours is but one basis for determining the overhead rate. The company may use machine hours , units etc.

Assume that the actual labour hours amounted to 6 500. The applied overheads will the be 6 500 x R6 which is R39 000.

The journal entry to record applied overheads is:

DR – WORK IN PROGRESS	39 000	
CR - FACTORY OVERHEAD CONTROL		39 000

The factory overhead account must be closed off and the difference be taken to cost of sales.

COST DRIVERS

Management has to visualise the production process and determine which factors causes the cost pool to increase. For example, a product may require a lot of machine hours and not many direct labour hours. Hence, machine hours will be the cost driver. It is this cost driver that will be used to calculate the overhead rate.

EXAMPLE

Sack Ltd is a manufacturing company with two production departments and one service department. The following information is supplied to you.

	R
Material	50 000
Direct labour	30 000
Indirect labour	20 000
Electricity	5 000
Depreciation - machines	12 000
Rent - factory	23 000
	140 000

	Production 1	Production 2	Service 1
Number of supervisors	3	4	1
Number of non-supervisory staff	50	75	10
Area (m^2)	3 000	5 000	2 000
Direct labour hours	6 000	10 000	-
Machine hours	4 000	4 000	2 000
% time spent by service departments			
To production departments	40%	60%	-

Assume that direct labour hours is the driving cost.

The overhead recovery rate will be calculated as follows:

Cost	Allocation basis	Total	Production 1	Production 2	Service 1
Indirect labour	Supervisors	20 000	7 500	10 000	2 500
Electricity	m^2	5 000	1 500	2 500	1 000
Depreciation	Machine hours	12 000	4 800	4 800	2 400
Rent	m^2	23 000	6 900	11 500	4 600
		60 000	20 700	28 800	10 500
Allocation of service dept			4 200	6 300	10 500
			24 900	35 100	

Recovery rate:

Production dept 1:

$$\frac{R24\ 900}{6\ 000}$$

= R4,15 per hour

→

Production dept 2:

$$\frac{R35\ 100}{10\ 000}$$

= R3,15 per hour

→

NB check Activity 6.7 study guide for possible predetermined overhead recovery.

Methods of stock valuation

Process of assigning cost to inventory

FIFO
According to FIFO, the accounting assumption is that materials received or purchased first are issued first are issued first, units are issued in the order they were received.

Weighted average
- No assumptive about the flow of materials.
- The issuing of materials at a weighted average cost assumes that each batch taken from the storeroom is made up of the same quantities from each consignment in inventory a t the date of issue, no attempt is made to identify when the units were purchased.

N3 you only average stock price after a purchases.

Effects of movement of stock on the balance in the warehouse for both methods.

Supplier ⟷ warehouse ⟷ production

Returns to supplier returns stock in the warehouse and it's treated as a negative receipts.

Returns to warehouse Increases stock in the warehouse and it treated as a negative issue. (add back to what is in the warehouse).

The warehouse clerk of Wasbank Ltd. presents you with the following information on material NKR:

Date		Transaction details
Feb		
1	Opening inventory	250 units @ R1,50 each
2	Purchased	750 units @ R1,80 each
5	Issued	300 units to production
11	Purchased	500 units @ R1,90 each;
	freight charges of R150 were paid for this order	
12	Returned	200 units bought on 2 February, to the supplier
13	Issued	500 units to production
21	Returned	150 excess units from factory to stores

REQUIRED

Calculate the value of inventory at 21 February using the FIFO method of inventory valuation.

FIFO method

Date	Receipts			Issues			Balance		
Feb	Quantity	Price R	Amount R	Quantity	Price R	Amount R	Quantity	Price R	Amount R
1							250	1,50	375
2	750	1,80	1 350				250 750	1,50 1,80	375 1 350
5				250 50	1,50 1,80	375 90	700	1,80	1 260
11	500	2,20	1 100				700 500	1,80 2,20	1 260 1 100
12	(200)	(1,80)	(360)				500 500	1,80 2,20	900 1 100
13				500	1,80	900	500	2,20	1 100
21				(150)	(1,80)	(270)	150 500	1,80 2,20	270 1 100
							650		1 370

Explanation

Date

2 Two batches are available: 250 units at R1,50, which came in first, and 750 units at R1,80, which came in last.

5 A quantity of 300 units is issued: 250 units at R1,50 are issued first, then the balance of 50 units from the 750 units at R1,80.

11 The freight charges of R150 must be added to the cost of the batch. [(500 x R1,90) + R150] = R1 100; R1 100 ÷ 500 = R2,20)

12 The 200 units are returned at the price at which they were purchased on 2 February. (Returns are treated as negative receipts and subtracted from the balance.)

13 The first batch of 500 units at R1,80 is issued. The batch of 500 units at R2,20 is still in inventory.

21 The units returned from the factory are from the last issue. (Returns from the factory are treated as negative issues and added to the balance.)

The value of the inventory on hand at 21 February is R1 370.

THE WEIGHTED AVERAGE METHOD

Date	Receipts			Issues			Balance		
	Quantity	Price	Amount	Quantity	@ average price	Amount	Quantity	Average price (calc)	Amount
Feb		R	R		R	R		R	R
1							250	1,50	375,00
2	750	1,80	1 350,00				250 750 1 000	 1,725	375 1 350 1 725,00
5				300	1,725	517,50	700	1,725	1 207,50
11	500	2,20	1 100				700 500 1 200	 1,923	1 207,50 1 100,00 2 307,50
12	(200)	(1,80)	(360)				1 200 (200) 1 000	 1,948	2 307,50 (360,00) 1 947,50
13				500	1,948	974,00	500	1,947	973,50
21				(150)	(1,948)	(292,20)	**650**	**1,947**	**1 265,70**

Explanation

Date

2	The average price of the units in inventory after the receipt must be calculated: Add the units and the total cost Divide the total cost by the total units to obtain the average price per unit.	 (250 + 750 = 1000) (R375 + R1 350 = R1 725) (R1 725 ÷ 1000 = R1,725)
5	All the units are issued at the average price. To determine the balance, calculate the value of the units in inventory at the average price.	(700 x R1,725 = R1 207,50)
11	A new average price is calculated after each receipt.	(R2 307,50 ÷ 1 200 = R1,923)
12	Units are returned to the supplier at the actual cost price. A new average price is calculated.	(R1 947,50 ÷ 1 000 = R1,948)
13	All the units are issued at the average price. The rounding causes a small change in the average.	
21	Units are returned from the factory at the average price at which they were last issued.	

Topic 4

Direct casting method vs the absorption costing method

The difference between the two methods lies on the treatment of cost/how to calculate manufacturing cost.
Direct costing method – only accounts for variable manufacturing cost ass the total manufacturing cost.
Absorption costing method – absorbs all manufacturing cost that is fixed and manufacturing cost as the total manufacturing.
Areas to be carefully with, when answering question

- Method used direct/absorption method – tell you how to calculate manufacturing cost.
- Method of stock valuation. **FIFO/WAVE** – tell you how to calculate value of
- Calculating units of closing/opening inventory stocks.

The layout/structure is the same they do not change

Direct Method structure /layout

Direct Method

Sales		*xxx*
Less variable cost of sales		*xxx*
Opening Inventory	*xxx*	
Variable manufacturing cost	*xxx*	
Cost of goods available for sale	*xxx*	
Less closing Inventory	*(xxx)*	
Variable manufacturing cost of sales	*xxx*	
Add other variable cost	*xxx*	
Contribution/marginal income	*xxx*	
Less Fixed cost	*xxx*	
Net Profit before tax	***xxx***	

Absorption

Sales	*xxx*
Less Manufacturing cost. VC	*xxx*
Fixed cost	*xxx*
Cost of goods available for sale	*xxx*
Less closing stock	*xxx*
Gross Profit	*xxx*
Less: Selling and admin cost	*xxx*
Not profit before tax	*xxx*

Calculation of closing units

	Units
Opening Inventory	*xxx*
Production	*xxx*
Units available for sale	*xxx*
Less sales	*xxx*
Closing inventory units	***xxx***

Calculation of value of stock

Weighted Average method

Absortion Methods

$\frac{manufacturing\ cost}{units\ manufactured}$ x units of opening inventory

Closing stock

$\frac{value\ of\ \ goods\ available\ for\ sale}{units\ available\ \ for\ sale}$ x units of closing inventory

Direct

$\frac{opening\ stock}{opening\ units}$ x vc/unit

Closing stock

$\frac{variable\ cost\ of\ \ goods\ available\ for\ sale}{units\ \ available\ \ for\ sale}$ x units of closing inventory

FIFO

$\frac{manufacturing\ \ \ cost}{units\ manufactured}$ x units of opening inventory

Closing

$\frac{manufacturing\ cost}{units\ manufactured}$ x units of closing stock

Direct

$$\frac{opening\ inventory}{units\ of\ opening\ inventory}$$ x VC/unit

Closing Inventory
Units of closing inventory x VC /unit

The following information was extracted from the accounting records of Poenie Ltd for the year ended 31 August 2010 and their 2011 budget:

	2010 Actual	2011 Budget
Total manufacturing cost per unit	R15,15	???
Completed units beginning of the year	4 000	8 000
Manufactured for the year	35 000	???
Sales for the year	???	42 000
Fixed costs		
Production	???	R325 000
Selling and administrative	???	R158 000
Variable cost per unit		
Production	R10,20	R11,00
Selling and administrative	R 1,25	R 1,40
Stock valuation method	FIFO	FIFO

Poenie Ltd
Budgeted Income statement for the year ended 31 August 2011

	R
Sales	1 050 000
Less: Cost of sales	803 918
Opening stock	121 200
Production costs	721 000
Less: Closing stock	(38 282)
Gross profit	246 082
Less: Selling and administrative costs	(216 800)
Net profit before tax	**29 282**

REQUIRED:

(a) What is the method of cost determination used in the income statement given above, direct or absorption costing? (1)

(b) Calculate the budgeted number of units manufactured during 2011. (3)

(c) Calculate the budgeted number of units on hand at 31 August 2011. (2)

(d) Draft the budgeted income statement for the year ended 31 August 2011 using the direct costing method. (10)

(e) Reconcile the difference in net profit before tax between the income statement given, and the income statement in (d). (4)

(a) Method of cost determination:

Absorption costing

(b) Budgeted number of units manufactured for the year 2011:

Production cost	= (units) (variable cost per unit)+ fixed costs
R721 000	= (x) (11)+ 325 000
11x	= R721 000 – R325 000
x	= 36 000

(c) Budgeted units on hand at 31 August 2011:

Opening	8 000
Manufactured	36 000
Sales	(42 000)
Closing	2 000

(d) Budgeted income statement for 31 August 2011 for Poenie Limited

	R
Income (given)	1 050 000
Less: Variable production cost	(455 600)
Opening stock (8 000 x R10,20)	81 600
Variable production cost (36 000 x R11)	396 000
Less: Closing stock ((396 000/36 000) x 2 000)	(22 000)
	594 400
Less: Variable selling and administration cost (R1,40 x 42 000)	(58 800)
Marginal income	535 600
Less: Fixed cost	(483 000)
Production	325 000
Selling and administration cost	158 000
Net Profit before tax	52 600

(e) Reconcile the difference in net profit between the income statement given, and the income statement in (d).

	R
Net profit: Absorption costing	29 282
Net profit: Direct costing	52 600
	23 318
Reflected by	
Opening stock	39 600
Absorption	121 200
Direct	81 600
Closing stock	16 282
Absorption	38 282
Direct	22 000
	23 318

Topic 5

ABC and Traditional

Traditional costly
Fixed production overhead cost is allocated to products by linking it to only one volume – driven allocation base e.g. machine hours. [Very crude way in which to allocate support overheads].

ABC – assumes that activities cause or drive the cost and that products are created by activities. Allocation of costs is therefore based on the utilization of activities.
Purpose – to allocate cost based on the cause of the cost.

Two stage allocation process.

Traditional Method	vs	ABC
1. Allocates overheads to production and service departments then reallocates service department costs to the production departments (secondary allocation)		1. Pools overheads to each major activity rather than departments.
2. Allocation of overheads to products based on a small number of second stage allocation bases (units/hours) resulting in overhead allocation rate.		2. Cost driven rate is used rather than allocation rate, a widen base for more accurate results.

Steps to follow answering ABC question
- Identify activities
- Identify cost drivers
- Create cost pool for each activity
- Calculate activity cost rate
- Allocate cost to cost object

Activity - is a task, action or unit of work that is carried out in the organization.

Transaction driver – count the number of times that an activity is performed.
Duration driver- represents the length of time required to perform an activity.

Colourful Stuff (Pty) Limited manufactures three products and uses an ABC system. The names of the three products are Pink, Blue and Yellow. The entity uses the same machinery (machine Blicks for assembly and machine Max for compression) to manufacture all three products. Pink and Blue tend to put a lot of pressure on machine Blicks and therefore the technician needs to inspect the machine frequently.

Manufacturing overheads for the month of October 2010 were as follows:

	R
Assembly	750 000
Compression	840 000
Indirect labour (technician salary)	12 000
TOTAL	**1 602 000**

Additional information:

1. The following information for October 2010 has been obtained from the manufacturing department:

Machine	Number of set-ups	Number of technician inspections
Blicks	10	5
Max	8	-
TOTAL	**18**	**5**

2. The following information also relates to October production:

Product	Units manufactured	Number of set-ups required		Number of technician inspections necessitated
		Assembly	Compression	
Pink	8 000	3	3	2
Blue	5 000	5	4	2
Yellow	3 000	2	1	1
TOTAL	**16 000**	**10**	**8**	**5**

3. Management has determined that the number of set-ups of the relevant machine is an appropriate cost driver regarding the activities of assembly and compression and that the number of technician inspections is an appropriate cost driver for the inspection activity. All activity costs were deemed material in size and justified separate treatment. The only task of the technician is to inspect the assembly machine.

REQUIRED:

Calculate the following (round off all amounts to two decimal places):

(a) The activity rates to be used for:
- Assembly (1)
- Compression (1)
- Inspection activity (1)

(b) The overhead costs per unit for each of the products (7)

(a) Calculation of Activity rates:

Activity	Activity costs R	Cost driver volumes	Activity rates R
Assembly	750 000	10 set-ups	750 000 / 10 = R75 000 per set-up
Compressing	840 000	8 set-ups	840 000 / 8 = R105 000 per set-up
Inspection	12 000	5 inspections	12 000 / 5 = R2 400 per inspection

(b) Calculate the overhead costs per unit manufactured for each of the products:

Activity	Pink R	Blue R	Yellow R
Assembly	3 set-ups x R75 000 per setup = R225 000	5 set-ups x R75 000 per setup = R375 000	2 set-ups x R75 000 per setup = R150 000
Compressing	3 set-ups x R105 000 per setup = R315 000	4 set-ups x R105 000 per setup = R420 000	1 set-up x R105 000 per setup = R105 000
Inspection	2 inspections x R2 400 per inspection = R4 800	2 inspections x R2 400 per inspection = R4 800	1 inspection x R2 400 per inspection = R2 400
TOTAL	R544 800	R799 800	R257 400
Number of units manufactured	8 000	5 000	3 000
Overhead costs per unit	R68,10	R159,96	R85,80

Topic 6

Job costing system

Method of calculating the cost per unit is used were goods are manufactured according to a clients specifications that is, where heterogeneous products are manufactured using the same production facilities.

When calculating the cost per unit, 1 job is looked at independently from the other jobs. An independent ledger account for a specific job is opened that will be debited with all specific job is opened that will be debited with all that was used for the job i.e. materials, labour and overheads. If the job was completed the account is closed off against the finished goods account. If not finished it will be closed of against the work in progress account.

NB The basis for allocating overheads.

RECORDING OF COSTS

The costs of each job are recorded separately, i.e., the direct material, direct labour and manufacturing overheads. The general ledger will house the control account, while the sub-ledger will house accounts for the different jobs.

ILLUSTRATION

Zap (Pty) Ltd purchased 1500 units of raw material during July 2000.

During this month, Job A and B were started. 400 units were allocated to job A and 300 units to Job B. The cost of the raw material is R1,00 per unit.

General ledger

MATERIAL CONTROL				WIP/PRODUCTION ACCOUNT			
Purchases	1500	Issue to Job A	400	Material J/A	400		
		Issue to Job B	300	Material J/B	300		

Cost or sub-ledger

JOB A				JOB B			
Material	400			Material	300		

A similar method is used for the labour and overhead content.

CALCULATION OF PRODUCT UNIT COST, VALUE OF CLOSING STOCK AND FINISHED GOODS

EXAMPLE 1:

Asmal CC uses a job costing system. The following is available regarding June 19.9, the first month of trading:

		R
1.	Material purchases	42 600
2.	Material was requested as follows:	
	Direct material	
	Job 1	16 950
	Job2	17 360
	Indirect material	4 360
3.	The following is a summary of the pay sheet:	
	Direct material	
	Job 1 (249 hours)	12 450
	Job 2 (273 hours)	13 650
	Indirect labour	2 800

4. Overheads are allocated on the basis of direct labour hours. The budgeted manufacturing overheads amount to R27 000 per month and the estimated normal capacity is 600 labour hours per month.

5. Job 1 (300 units) was completed during the month and 200 units were sold at 30 June for R130,00 per unit.

6. The following additional expenses were debited to the overheads control account:

	R
Electricity and water	3 130
Depreciation - equipment	8 200
Factory rental	8 000

REQUIRED

a) Calculate the total cost of Job 1 and the cost of work in process (incomplete work) on Job 2 at 30 June 19.9.

b) Calculate the profit/(loss) on the sale of 200 units of Job 1.

SOLUTION

a)

	Job 1 R		Job 2 R	
Direct material	16 950		17 360	
Direct labour	12 450		13 650	
Overheads	11 205	1	12 285	2
Cost of Job 1	40 605		-	
Cost of work in process Job 2			43 295	

Explanatory notes:

1 Overheads are allocated on the basis of direct labour hours. The budgeted manufacturing overheads amount to R27 000 per month and the estimated normal capacity is 600 labour hours per month. During June 249 labour hours were spent on Job 1.

The overhead allocation is: $\frac{\text{R27 000}}{\text{600 hours}}$ = R45 per hour

$\frac{\text{(R27 000}}{\text{(600 hours}}$ x 249 hours = R11 205) or R45 per hour x 249 labour hours

2 During June 273 labour hours were spent on Job 2.

$\frac{\text{(R27 000}}{\text{(600 hours}}$ x 273 hours = R12 285) or R45 per hour x 273 labour hours

b)

Job 1:	R
Sales (200 units x R130)	26 000
Less: Cost of units sold	27 070
$\left(\frac{\text{R40 605}}{1} \times \frac{\text{200 units}}{\text{300 units}}\right)$	
Net loss on the sale of 200 units	(1 070)

SPOILT UNITS AND THE RECORDING OF SUCH UNITS IN A JOB COSTING SYSTEM

In any manufacturing process it happens from time to time that goods manufactured do not meet the required quality standards. Such products are known as spoilt products. If the spoilt products are so defective that it is impossible to deliver them to the client, management classifies them as **wasted units**. It is sometimes possible to **reprocess** spoilt products so that they comply with the client's specifications and can be sold as approved products.

Wastage/losses falls into two categories, namely: normal (unavoidable) wastage and abnormal (avoidable) wastage.

Note the way in which scrap or waste material is handled. If it can be sold the actual overheads are reduced by the proceeds derived from the sale of the scrap.

The manner in which the additional costs associated with the reprocessing are recorded and disclosed is influenced by the reprocessing costs, which may be either process or job related.

EXAMPLE 2:

1. Elco Manufacturing Company manufactures machinery according to client specifications. On 1 May 19.9 the incomplete work consisted of one job, Job 5. The recorded costs on this incomplete job were R13 000.

   The following information is available with regard to May 19.9:

   - Material amounting to R7 500 was in stock at the beginning of the month. Additional material to the amount of R38 200 was purchased. A single control account is used for both direct and indirect material.

   - Material was issued as follows:

	R
Job 5	15 800
Job 6	13 400
Job 7	9 100
Indirect material consumed	2 100

   - Labour related costs:

Job 5	16 000
Job 6	12 000
Job 7	9 000
Indirect labour and supervision	5 500

   - Other manufacturing overheads on May 19.9:

Depreciation on machinery and equipment	6 000
Water and electricity	3 000
Sundry overheads	1 900

   (Overheads are allocated to jobs on the basis of direct labour costs).

   - Jobs 5 and 7 were completed during the month and invoiced out to the clients concerned at R65 600 and R27 200 respectively.

Required

Draft a cost and income statement for May 19.9 showing the situation regarding each job and stock levels of each at the end of the month.

SOLUTION

ELCO MANUFACTURING COMPANY

INCOME STATEMENT FOR MAY 19.9

	Job 5 R	Job 6 R	Job 7 R	Total R
Incomplete work: 1 May 19.9	13 000			13 000
Direct material consumed	15 800	13 400	9 100	38 300
Opening stock				7 500
Plus Purchases				38 200
				45 700
Less: Indirect material				2 100
				43 600
Less: Closing stock				5 300
Direct labour	16 000	12 000	9 000	37 000
Allocation of overheads	8 000	6 000	4 500	[1] 18 500
Indirect material				2 100
Indirect labour				5 500
Depreciation				6 000
Water and electricity				3 000
Sundry overheads				1 900
	52 800	31 400	22 600	106 800
Less: Closing stock of incomplete work		31 400		31 400
Cost of sales	52 800	-	22 600	75 400
Sales	65 600	-	27 200	92 800
Gross profit	12 800	-	4 600	17 400

Explanatory notes:

[1] Overheads are allocated on the basis of direct labour hours. Total direct labour costs are:

R16 000 + R12 000 + R9 000 = R37 000 and total overheads are
R 2 100 + R 5 500 + R6 000 + R 3 000 + R1 900 = R18 500.

Overheads applied

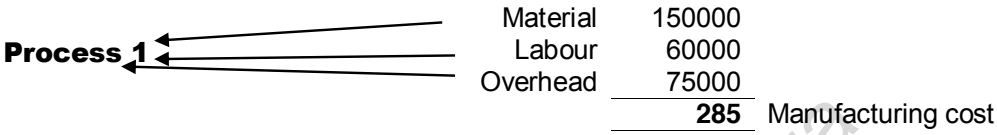
Job 5 $\frac{\text{R16 000}}{\text{R37 000}} \times \frac{\text{R18 500}}{1}$ = R8 000

Topic 7

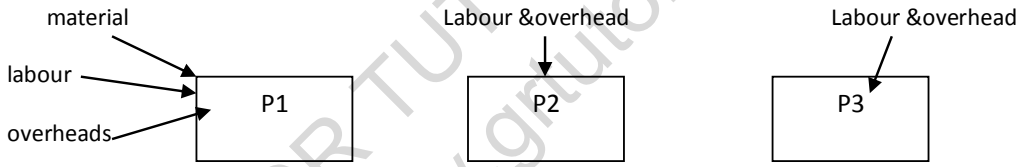
Process costing system

A process costing system is a costing system used to obtain record, and report cost data in industries where large quantities of similar products pass through a single process or a consecutive process in the course of production.

Unit cost in system with a single process



Unit cost in a system with two or consecutive process



Prev Process	-	50000	86000	**Finished goods**
Material	12000	-	14000	130 000
Labour	29000	16000	2000	
Overhead	9000	20000	7000	
Total	50000	86000	130000	
units	10000	10000	10000	
Cost/unit	R5	R86	R13	

Process cost Reports

- Quantity statement
- Production cost statement
- Allocation statement

Quantity Statement

Accounts for all the units produced in the process
NB Only Quantities involved

Key things to note

- Input = output
- Method of stock valuation used
- Calculation of units that reached/passed the wastage point during the current period (Losses).
- Wastage points
- Stage of completion of opening and closing stock
- Equivalent completed units

Frame works

Quantity statement for the period ended (weighted average method)

Inputs	Details	Output	Raw Materials	%	conservation	%
	Input					
xxx	Opening WIP					
xxx	Put into production					
	Out put					
	Completed and transferred	xxx	xxx	xxx	xxx	xxx
	Normal loss	xxx	xxx	xxx	xxx	xxx
	Abnormal loss	xxx	xxx	xxx	xxx	xxx
	Closing WIP	xxx	xxx	xxx	xxx	xxx
xxx		**xxx**	**xxx**		**xxx**	

FIFO Method

Inputs	Details	Output	Raw Materials	%	conservation	%
	Input					
xxx	Opening WIP					
xxx	Put into production					
	Out put					
	Completed and transferred	xxx	-	xxx	xxx	xxx
	Opening wip					
	Current production	xxx	xxx	xxx	xxx	xxx
	normal loss	xxx	xxx	xxx	xxx	xxx
	Abnormal loss	xxx	xxx	xxx	xxx	xxx
	Closing WIP	xxx	xxx	xxx	xxx	xxx
xxx		**xxx**	**xxx**		**xxx**	

Equivalent Completed units

- Ecus are used to compare partially completed units. (WIP) by coveting them into a comparable number of fully completed units called "equivalent units".
- e.g. If unit cost R100 /unit to manufacture and there are 2 00 WIP units which are 40% complete (material 100%)
- it means, ECU = 200 X 40 % = 80 units
- we use stage of completion to calculate the ECU.

NB. When calculating ECU for materials and conversion.

Using the same above mention scenario and assuming that this was opening stock.

- Remember Opening stock these are units which were started to be produced in the previous period to be finished in the current period so what written took place in the previous period. We are to account for the current period.

- For material 100 % - 100% = 0
  Conversation
  N 100% - 4 0% = 60 % i.e. 60% of conversation would be done this current period.

Losses
Abnormal – avoidable – Balancing figure in the Quantity statement
Normal – unavoidable - calculated

Normal Loss
We have to calculate the unit that would have passed to wastage point during the current period.
Losses are accounted for in the period are incurred.
Look at opening stock and closing stock whether they readed the wastage point in the current period or not.
For opening stock ascertain if the loss was accounted for in the previous period or not. As for closing stock ascertain whether the loss on closing units has been incurred or will be incurred in the following period.

Oct / Nov 2008 Question (20 marks)

Ping cc manufactures a single product in one process. The following information for August 2008 is available

Work in process – 1 August 2008	72 000 units
Material-100% complete	R450 000
Conversion costs – 50 % complete	R766 200
Material issued for 182 000 units	R3148 800
Conversation cost	R3762000
Units completed	150 000units
Work in process 31 August 2008	80 000 units
Material 100%	

Conversation 75%

Additional Information

1. Material is added at the beginning of the process conversation costs are incurred evenly throughout the process.
2. Normal spoilage is estimated @ 5% of input that reaches the point of spoilage.
3. Losses occur when the process is 90% complete.
4. Stock is valued according to the first in first method

Required

- Prepare the following statement for August 2008
- Quantity Statement
- Production cost statement
- Allocation statement

SOLUTION

Key things to note:

- method of stock valuation
- Wastage point
- Normal loss percentages

Input	Details	Output	Material		conversion	
72 000	Opening WIP					
182 000	Put Into Production					
	Completed & transferred from WIP	68400	-		34200	
	Current production	81600	81600		81600	
		150000	81600		115800	
	Spoilage :Normal	8700	8700		7830	
	5%(72000+182000-80 000)					
	Abnormal	15300	15300		13770	
	Closing wip	80000	50 000		60000	
254000		254000	185600		197400	

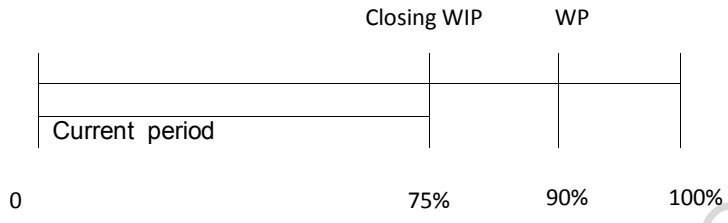
LOSS

Opening WIP Prev Period	**Opening WIP**	**WP**
	50%Current period	90%

100

Opening units reached/passed wastage point in the current period therefore loss on opening stock to be accounted for in the current period.

CLOSING WIP



Closing WIP units has passed the wastage point; they will pass in the following period therefore no loss has to be accounted for during the current period.

Production cost statement
It deals with cost incurred during the process.
NOTE: the method of stock valuation used it affects the cost statement.

Using the Oct/Nov Question
First in First Out

	Total			Material	Conversation
Opening WIP	1216200			-	-
Current costs	910 800			3148800	3762000
	8127000			3148800	3762000
				185600	197400
:Equivalent units					
EC/unit	36.03	16	+		19.06

Assuming that weighted average was used

	Total		Material		Conversation
Opening WIP	1216200		450000		766200
Current cost	6910800		3148800		3762000
	8127000		3 598 800		4 528 200
			185 600		
	42.33	=	19.39	+	22.94

Allocation Statement
Allocation statements links the Quantity Statements to cost incurred during the period (production cost statement).
Note Normal losses are accounted as product cost.
Abnormal losses are period cost.

OCTOMBER NOVEMEBR 2008

Normal loss to be allocated

(87000x16.97)+(7830x19.06) =			296879
Aportioned to units completed	150 000	$\frac{150\,000}{165\,300}$ x 296 579	269 400
Abnormal units	15300	$\frac{15300}{165300}$	27479
	165 300		

Allocation Statement

Opening WIP	1216200	1216200
Material	450000	
Conversation (115 800 x 19.06	766200	
Current cost		3861300
Material (81600x16.97)	1384752	
Conversion (115800x19.06)	2207148	
Normal loss	269400	
Completed and transferred		5077500
Abnormal spoilage		549579
Material 15 300 x 16.97	259641	
Conversion 13 770 x 19.06	262456	
Normal loss	27479	
Closing WIP		2501200
Material 18000 x 16 497	1357600	
Conversation 160 000 x 19.06	1143600	
		1276
Difference due to rounding		**8127000**

Topic 8

Joint and by production costing system

Joint production
Production arising from the joint process which have significant value. Joint process is internationally completed to obtain these products.

Joint process
Two or more different products which are not separately identifiable until this process is completed, emerge from the joint process.

Split of point
Point in the production process where the separate joint products can be identified for the first time.

Joint cost
- Common cost incurred prior to the split off point are known as joint costs
- Further processing costs
- Extra cost incurred to further convert the separated joint products into final products.

By product

Products that is insignificant in value to the joint products.

Methods used to allocate joint cost

1. Physical standard method
- Physical quantities of products will be used to proportion the joint cost (in proportion to the physical quantity of each joint product produced).
- Suitable where the output is similar in nature and value.

2. Market value at slit off point method
   - Joint calls are allocated to each product in proportion to their potential market value of the product at split off point in the production process.
   - Assumes that higher selling prices are accompanied by higher costs.

3. Net realizable value at split off point method
   - Market value of the final product is taken and reduced by any costs incurred for processing of the product beyond the split off pout and by selling and distribution costs incurred to sell the final product.
   - NRV values are used to establish the ratio in which the joint cost costs are to be apportioned.

4. Reversal costing method

When using this method, the question is not what portion of the costs should be allocated to the products but what amount should be absorbed by each product to arrive at a constant gross profit percentage for all or specific products.

Refer to Activity 19.2 study guide

May / June 2008

Gee Gee Ltd manufactures three products in a single process.
The following are actual result for March 2008.

	A	V	M
Selling price @ split off point(per litre)	6	8	9
Selling price after further processing (per litre)	14	12	21
Cost after split off point	188500	111000	233500
Output	35000L	25000L	20000L

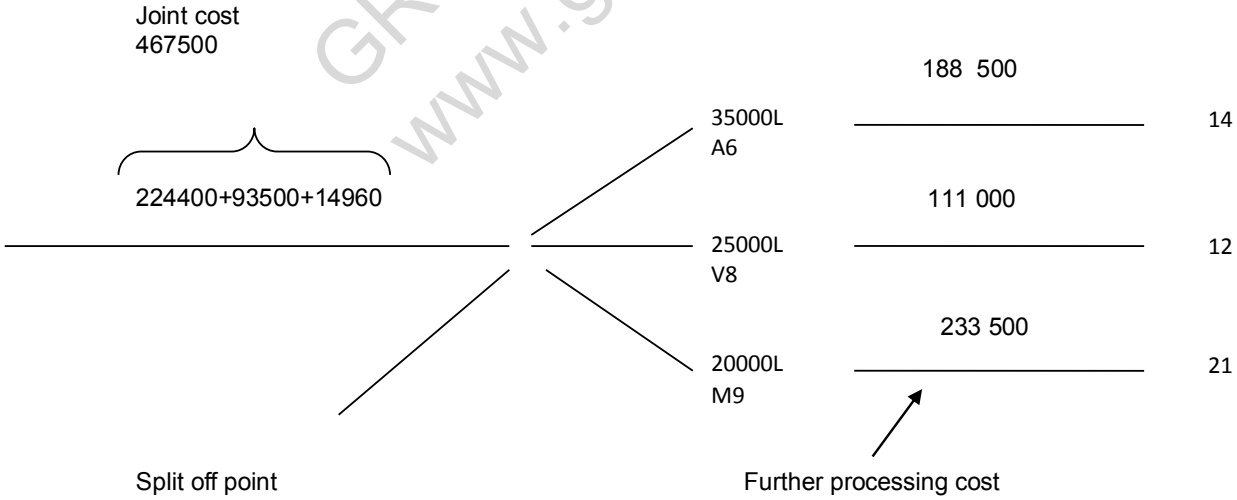
The following cost are incurred in a joint process

Direct material	R224 400
Direct Labour	R93 500
Manufacturing overheads	R149 600

It is the policy of the company to allocate joint costs according t o the relative market value of the final product method.
There was no stock on hand at the end of March 2008.

Required

a. Calculate the actual Profit/loss on sale of each product for March 2008 if all three products are further processed.
b. Calculate how profits could be maximized if one or more products are sold at split – off point.



(a)

Product	Rel Market Value	J. C Allocation
A	(35 000 X 14) – 188 500 = 301500 $\frac{301500}{677000}$ X 467 500	208208
V	(25000 X 12) – 111000 = 189 000 $\frac{189\,000}{677\,000}$ X 467 500	130513
M	(20 000 X 21) – 233 350 = 186 500 $\frac{186500}{677000}$ X 467 500	128786
	677 00	**467500**

	A	**V**	**M**
Sales 35000x14	49000	300000	420000
25000x12			
20000x21			
Less cost			
Joint cost	(208 200)	(130 513)	(128 786)
Additional cost	(188500)	(111 000)	(233 500)
Net Profit	**93300**	**58487**	**57714**

(b)

	A	**V**	**M**
Sales 35000 x 6	210000		
25000x8		200000	
20000x9			180000
Less joint cost	208200	130513	128786
	1800	**69487**	**51214**

Therefore: Product **A** should be processed further	93300
Product **V** should of split off point	69487
Product **M** should be further processed	57714
Max Profit	**220501**

Accounting for by products

Revenue from by-products are accounted for in the ways.

- Reduction of joint cost.
  - This method, reduce the joint cost by subtracting revenue from byproducts from the total. Joint cost before being allocated.

  - Separate income
    - It can also be seen as additional income and after calculating net profit the revenue from by-products will be added as a separate income.

  - Reduction of cost sales
    - Reduce the cost of sale with the revenue from by products.

Topic 9

Standard costing

Standards – predetermined targets, they are targets inputs that should be achieve under efficient operating conditions.

Note: A budget represents the costs of an entire activity or operation where as standards represents the same information per unit.

Calculating variances

Basically we are comparing the actual results to the standards in all the variances calculated.

When Actual < standards = favourable variances
Actual > Standards = unfavourable variances

Income
Actual < standards = unfavorable variance
Actual > standards = favourable

Fomula
Materials
TMO = MPV + MQV
MPV = (AP – SP) AQ
MQV = (AQ – SQ) SP

Labour
TLV = LRV + LEFFV
LRV = (AR – SR) Act hour
LEffV = (Act hrs – Shrs) SR

Variable manufacturing variance (Vm olho)
Varying with Labour hours
TVmo/hv = VM0/h Rate variance + VM 0/h efficiency variance.
Vm 0/h rate v = (AR – SR) Actual hrs
V m 0/heefv = (Act hours – 5 hours) SR

Vary with Production
TVM 0/hv = VM 0/h rate variance
VM 0/h rate v = (Ar – Sr) Actual output
V M 0/h rate V = 0 (always) efficiency is measured with hours not units only.

October / November 2008

GoGoGo cc manufactures and sells a single product the following information was obtained f or June 2008

- Budgeted sales R1386 000 (Budgeted selling price per unit R16.50
- Actual sales R1352000
- 84500 units were manufactured and sold during the June 2008.
- The standard cost per unit is calculated as follows.

		R
Material	R5 120 per kg	7.80
Labour	R8 per hour	4.00
Variable overheads	Vary with production	1.20
Fixed overheads	R3.60 per machine hour	2.00
		15.00

- Actual labour hours for June 2008 were 42200 hours
- Actual material costs were R670400
- Variable overheads of R95200 were paid
- Fixed overheads amounting R142000 were paid in June 2008

Budgeted and actual net profit is R135 000 and R100 420 respectively.
The following variances were calculated.

	R
Material purchase price variance	12500 Unfavourable
Material quantity variance	1300 favourable
Labour rate variance	6330 unfavourable
Fixed overhead variance	18600 favourable

Required

a. Calculate the following for the 2008
   i. Sales price variance
   ii. Actual quantity purchased
   iii. Actual rate paid per labour hour.
   iv. Labour efficiently variance
   v. Variable overhead variance.

b. Reconcile the budgeted profit with actual profit for June 2008.

Solution

i. Sales price variance = Act sale – standard sales

= (splu – Ssplu) Units sold

$(^{1352000}/_{84500}$ - 16.50)84 500

42250 u

ii. Actual quantity purchased =
MQV = (AQ-SQ) sp

5.20

1300 (f) = (x – (84500x1.5)) ~~16.50~~

5.20

$\frac{1300\ (f)}{\sim\!\!16.50\!\!\sim} = \frac{(x-126750)\sim\!\!16.50\!\!\sim}{\sim\!\!16.50\!\!\sim}$

5.20 5.20

250(f) = x – 126 750

Note : variance is 250(f) which means the Actual Quantity must be less than the standard Quantity of

250(f) = x – 126 750

Change the favourable variance to a negative to get the correct answer. (Always to the opposite)

-250 = x – 126 750

X = 126 500

AQ = 126 500

Actual rate paid
LRV = (Ar – SR) Actual hours

$\frac{6330(A)}{42200} = \frac{(x-8)42200}{42\,200}$

0.15 A = x -8

Remember how we treated the previous question

0.15 +8 = x

X = 8.15

Actual rate = R8.15/hour

vi Labour efficiency variance = (Actual hrs – 5hrs) SR
= (42200 – (0.5x84500)) 8
=(42200-42250)8
=400(8)

v.variable overhead variance =
Rate variance = (AR –SR)Production

$= ({}^{95200}/_{84500} - 1.20)\ 84500$

(1.13-120) 84500
6200 (f)

Reconciliation

Budgeted profit	135000
Actual profit	100420
	34580
Selling price v	(42200)
Total mat v	(11200)
Total labour	(5930)
Variable overhead v	6200
Fixed overhead v	18600
	34580

Topic 10

Relevant Info for short term Decision

Relevant Information

Relevant Information – This is the information that should be taken into account in order to choose an appropriate course of action from a set of possible options.

Criteria for Relevance

To be relevant to a specific decision a cost should meet the following:
It relates to the future (not a sunk cost)
Payable/ receivable in cash.
It is directly determined by the alternative selected.
It arises as a result of the decision.

Sunk costs
Cost incurred in the past and cannot be changed.

Committed costs/increase (unavoidable)

Future cash flows that arise as a result of a decision or action taken in the past.
They are unaffected by the decision that need to be taken now and cannot be presented by selecting anyone of the available alternatives.

Incremental cost

Additional cost that will be incurred if a specific alternative is selected and that will lead to future cash outflow for the organization

Incremental Income
Additional income generated if a specific alternative is selected and that will lead to a future cash inflow for the organization.

Avoidable costs
Cost that an organisation prevents from being incurred by choosing a specific option.

Avoidable costs are relevant cost.

Opportunity costs
Forfeited cost

Safesit (Pty) Limited has five different departments that manufacture various products. Department 1 manufactures vehicle safety seats for babies.

Currently, two products, namely a budget baby seat and a standard baby seat, are manufactured.

Management is concerned about the sudden decline in the sales of the standard baby seat. Despite attempts to reduce the number of employees on the production line, as well as a recent productivity drive aimed at higher productivity and less wastage of resources, the department is operating at a loss.

The following budget has been compiled at 60% of the available capacity, based on labour hours, for the year ending 28 February 20.1:

		Budget baby seat R	Standard baby seat R
Sales		1 358 000	1 620 000
Less:	Expenses	1 281 000	2 004 000
	Direct material	357 000	684 000
	Direct labour	210 000	300 000
	Overheads	714 000	1 020 000
Net income/(loss)		77 000	(384 000)
Production and sales (units)		7 000	6 000

Additional information:

1. Overheads are allocated to production based on direct labour hours.
2. An amount of R1 387 200 in respect of fixed overheads is included in overheads.
3. Organisational overheads relating to head office costs are allocated to departments. These overheads amount to 30% of the fixed overheads stated above. The remainder of the fixed overheads specifically relate to Department 1.
4. Sixty percent (60%) of the fixed overheads of Department 1 are discretionary.
5. All production line workers earn the same hourly rate.
6. The demand for the budget baby seat will not be affected if the manufacturing of the standard baby seat is discontinued.

REQUIRED

(a) Advise the management of Safesit (Pty) Limited on the decision of whether the manufacture of the standard baby seat should be discontinued or not, in the long-term as well as the short- to medium-term. Motivate your reasoning in respect of cost items not taken into account. (21)

(b) Briefly motivate possible long-term steps that could be taken to solve the problem experienced in Department 1. (6)

[27]

SAFESIT (PTY) LIMITED

(a) *Decision on whether the manufacture of standard baby seats should be discontinued in the long-term as well as the short- to medium-term*

Long-term	R
Relevant income	1 620 000
Less: Relevant expenses	1 759 200
Direct materials	684 000
Direct labour	300 000
Variable overheads	204 000①
Fixed overheads	
- Department 1	571 200②
- Organisational overheads	- ③
Relevant net loss	(139 200)

Short- to medium-term	
Relevant net loss above	(139 200)
Add: Committed portion of fixed overheads of Department 1	228 480④
Relevant net income	89 280

The manufacture of the standard baby seats should therefore be discontinued in the long-term. In the short- to medium-term the manufacture of the standard baby seats should be continued.

Calculations and notes:

① *Variable overheads*

	R
Total overheads (714 000 + 1 020 000)	1 734 000
Less: Fixed overheads	1 387 200
Variable overheads	346 800
- Budget seat $(^{210}/_{510}$ x R346 800) !!	142 800
- Standard baby seat $(^{300}/_{510}$ x R346 800) !!	204 000

Limiting factors and allocation of resources

LIMITING FACTOR/CONSTRAINT

A limiting factor/constraint exists when:

- the availability of a resource is limited, i.e. the resource is scarce, or is a physical restriction; AND
- the scarcity/constraint prevents the organisation from manufacturing (buying in the case of retailers) all the products it would be able to sell.

Decision-making in the case of one or more limiting factors

We have pointed out that the organisation's output may be restricted by one or more limiting factors. This prohibits the organisation from selling all the units that its customers demand. Resource allocation is therefore one of the most critical decisions that the management accountant can help to make.

The following matrix provides guidance about which approach to follow:

Establish sales demand (units) of all products					
Establish extent of available resources (= feasible output)					
Feasible production output < demand				**Feasible production output > demand**	
What are the factors/resources that are limiting the output?				**Demand unlimited ①**	**Demand limited ②**
	How extensive is the organisation's product range?			Only produce product with highest contribution **per unit**	Produce products in descending order of contribution **per unit**
Number of limitations:	**One product**	**Two products**	**Multiple products**		
One limitation	Limit output to resource supply ③	Rank according to contribution **per limiting factor** ⑤	*Rank according to contribution **per limiting factor** ⑤		
More than one limitation	Limit output to resource with highest constraint ④	*Linear programming: ⑥ – Graphical approach – Simultaneous equations	*Simplex tableau ⑦		

Wheely (Pty) Limited manufactures tyres for cars and bakkies. Speedy tyres are manufactured for cars and Bumpy tyres for bakkies.

Mr Screech, the managing director, has provided you with the following information:

1. The results of a market survey show that 50 000 Speedy and 40 000 Bumpy tyres can be sold at prices of R200 and R240 per tyre respectively.

2. A shortage of material exists, resulting in only R4 620 000 of material being available annually.

3. The flexible budget, at capacity levels of 90% and 100%, indicates that total overheads will amount to R7 984 000 and R8 200 000 for 24 300 and 27 000 machine hours respectively.

4. The prime costs per tyre is as follows:

	Speedy	Bumpy
	R	R
Material	50	55
Direct labour (at R50 per hour)	30	35
	80	90

5. The machining of a Speedy tyre takes 15 minutes and that of a Bumpy tyre 22,5 minutes.

REQUIRED

(a) Determine the product mix which will maximise the income of the company, assuming a capacity utilisation of 100% in terms of machine hours. (24)

(b) Calculate the net contribution to profit resulting from the product mix determined in (a) above. (5)

WHEELY (PTY) LIMITED

(a) Product mix

Marginal income per unit

	Speedy	Bumpy
	R	R
Selling price	200	240
Less: Variable costs	100	120
Material	50	55
Direct labour	30	35
Variable overhead	20 ①	30 ①
Marginal income	100	120

Calculations:

① *Variable overhead*

Capacity	Hours	R
100%	27 000	8 200 000
90%	24 300	7 984 000
	2 700	216 000

Variable overhead per hour = R216 000 ÷ 2 700
= R80

Variable overhead per unit:

- Speedy = 15 /60 x R80
= R20

- Bumpy = 22,5 /60 x R80 !!
= R30

Probabilities and decision tree

PROBABILITY

Probability refers to the chance that a future event will result in a specific outcome or range of specific outcomes.

A probability is usually expressed as one of the following:

- a percentage, for example 30%; or
- a fraction, for example 0,3.

DECISION TREE

A graphic representation of decisions to be made and the uncontrollable events that could affect these decisions.

A decision tree generally consists of the following two elements:

- nodes
- branches

NODE

A *node* represents a **decision** that needs to be made or an **external event** (uncontrollable) that will be taking place and that could lead to different outcomes.

Type of node	Graphic representation	Symbol
Decision	Box	□
External event	Circle	O

BRANCH

A *branch* connects one node to the following. In MAC2601, a branch will be represented by a solid line.

SECTION A

Harrison Investors (Pty) Limited has purchased 35 hectares of land. A large variety of indigenous plants and trees grow on the property and there is also a large dam. It is situated 60 kilometres south-west of one of the main entrances to the Kruger National Park.

The purchase price of the land amounted to R150 000, which included all transfer costs.

The directors of the company have identified various alternatives for the possible development of the land, but most of these alternatives have been ruled out for different reasons.

The development alternatives that are still being considered are:

- to develop a caravan park, or
- to develop a conference centre.

The following information regarding these two investment alternatives is available:

1. *Development of a caravan park*

   A caravan park, large enough to accommodate 150 caravans, could be developed at an estimated cost of R350 000. If an additional amount of R80 000 could be spent, water sports facilities could be included in this development.

   Caravan bays will be rented out at a rate of R50 per day, irrespective of whether water sports facilities are provided.

   If water sports facilities are not provided, it is estimated that there is a 75% chance that the park will be fully booked equivalently for 40 days per annum, and a 25% chance that it will be fully booked equivalently for 30 days per annum.

   If water sports facilities are provided, it is estimated that there is a 90% chance that the park will be fully booked equivalently for 45 days per annum, and a 10% chance that it will be fully booked equivalently for 35 days per annum.

   The annual maintenance costs of the caravan park is estimated at fixed amounts of R30 000 if water sports facilities are not provided, and R40 000 if these facilities are provided.

2. *Development of conference centre*

   A conference centre, offering a broad spectrum of facilities, including seminar rooms, a restaurant, swimming pool and sports courts, could be developed at a cost of R850 000.

   Once it has been decided to develop the conference centre, an advertising campaign in order to introduce the centre to businessmen will be considered. Should it prove worthwhile to launch the campaign, similar campaigns will be launched annually at similar costs in order to maintain the goodwill created in this way.

The advertising campaign can be launched country-wide, or limited to Gauteng only, at a cost of R100 000 or R60 000 respectively.

After all relevant costs (including the cost of the campaign, where applicable), have been taken into account, the net income before taxation is estimated as follows:

- If advertising is done country-wide, chances are 70% of earning a net income of R530 000, otherwise R370 000 will be earned.
- If advertising is done in Gauteng only, chances are 90% of earning a net income of R500 000, otherwise R300 000 will be earned.
- If no advertising campaign is launched, chances are 60% of earning a net income of R300 000, otherwise R200 000 will be earned.

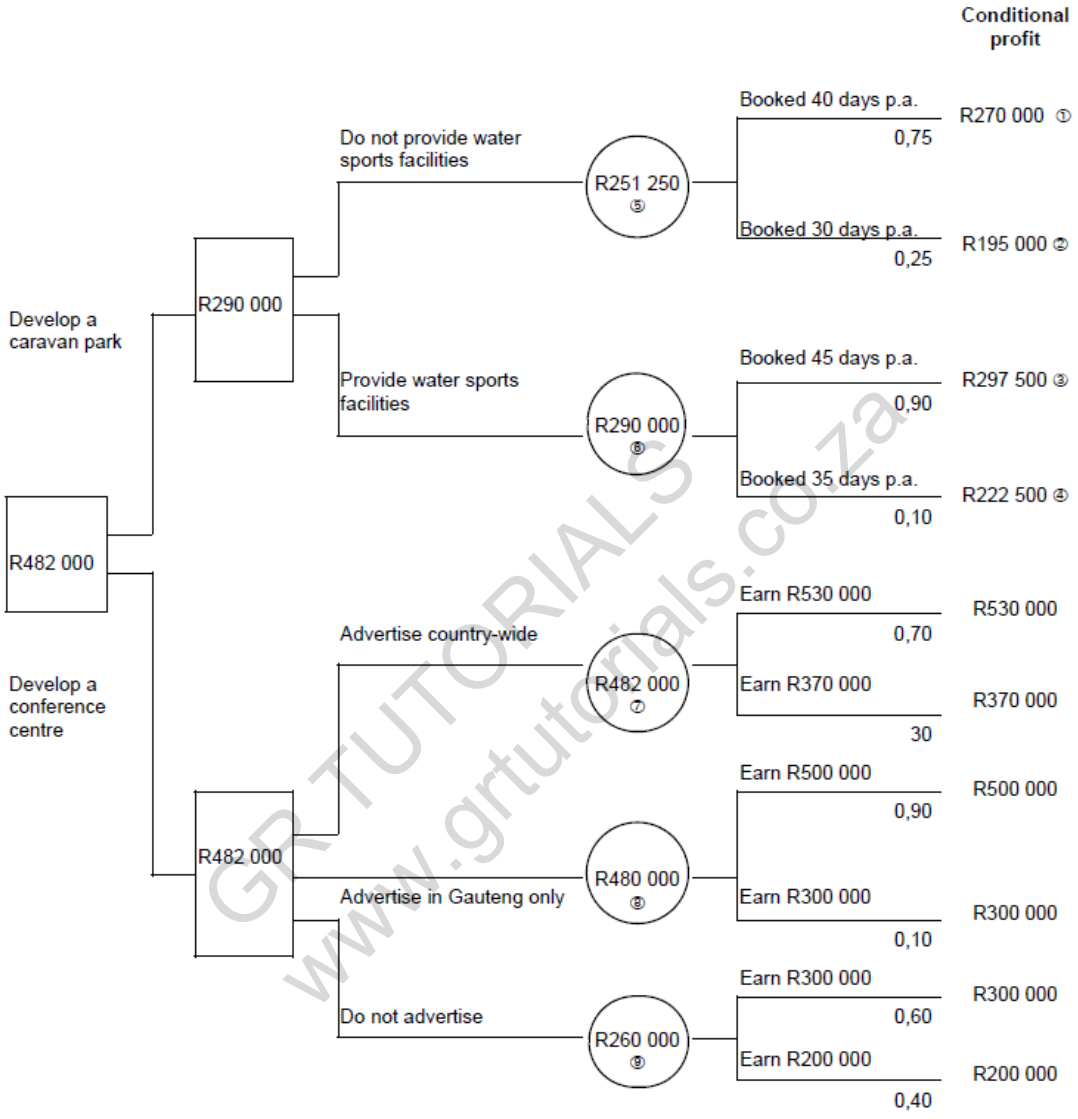
REQUIRED

Determine by using a decision tree which alternative would render the highest net income. (24)

HARRISON INVESTORS (PTY) LIMITED

SECTION A

Decision tree



Conclusion:

The alternative in terms of which a conference centre is developed and advertised country-wide will render the highest estimated net income. (24)

Calculations:

①	(40 x 150 x R50) - R30 000	=	R270 000
②	(30 x 150 x R50) - R30 000	=	R195 000
③	(45 x 150 x R50) - R40 000	=	R297 500
④	(35 x 150 x R50) - R40 000	=	R222 500
⑤	[(270 000 x 0,75) + (195 000 x 0,25)]	=	R251 250
⑥	[(297 500 x 0,90) + (222 500 x 0,10)]	=	R290 000
⑦	[(530 000 x 0,70) + (370 000 x 0,30)]	=	R482 000
⑧	[(500 000 x 0,90) + (300 000 x 0,10)]	=	R480 000
⑨	[(300 000 x 0,60) + (200 000 x 0,40)]	=	R260 000

Question papers and answers

Jun-2003	Jun-2004	Jun-2006	Jun-2007	Jun-2008	Jun-2009	Jun-2010	Jun-2011	Jun-2012	Jun-13
Process Costing	Process Costing	Process Costing	Process Costing	Process Costing	Job Costing	Direct & Absorption Costing	CVP Analysis	O/H Allocation	MCQ Questions
Semi-Variable O/Hs	Joint & By-Product Costing	Direct & Absorption Costing	Direct & Absorption Costing	Direct & Absorption Costing	Direct & Absorption Costing	Standard Costing	Process Costing	Standard Costing	Standard Costing
Standard Costing	B.E Analysis	Joint & By-Product Costing	Standard Costing	Joint & By-Product Costing	Standard Costing	Process Costing	Direct & Absorption Costing	Process Costing	Relevant Costing
Budgeted Income Stament	Semi-Variable Costs	B.E Analysis	B.E Analysis	Contra Costing	Contra Costing	O/H Allocation	Sundry Questions	Direct & Absorption Costing	Sensitivity Analysis
B.E Analysis	Direct & Absorption Costing	Semi-Variable Costs	Semi-Variable Costs		Process Costing	Joint & By-Product Costing		CVP Analysis	Nature & Behaviour Of Costs
Contract Costing									Accounting for Material, Labour & O/Hs
									Job Costing
									Process Costing

Nov-2000	Nov-2002	Nov-2003	Nov-2005	Nov-2006	Nov-2008	Nov-2009	Nov-2010	Nov-2011	Nov-13
Direct & Absorption Costine	Process Costing	Process Costing	Process Costing	Process Costing	Process Costing	Joint & By-Product Costing	Process Costing	Process Costing	MCQ Questions
Semi-Variable O/Hs	Joint & By-Product Costing	Sundry Questions	Direct & Absorption Costing	Direct & Absorption Costing	Direct & Absorption Costing	Contract Costing	Standard Costing	Direct & Absorption Costing	Direct & Absorption Costing
B.E Analysis	Direct & Absorption Costing	Contra Costing	B.E Analysis	Standard Costing	B.E Analysis	Process Costing	Direct & Absorption Costing	Standard Costing	ABC Costing
Standard Costing	Sundry Questions	Direct & Absorption Costing	Standard Costing	Contra Costing	ABC Costing	Direct & Absorption Costing	Sundry Questions	Sundry Questions	Process Costing
Job Costing		B.E Analysis		B.E Analysis	Standard Costing	B.E Analysis			Standard Costing
				ABC Costing	Contra Costing	Standard Costing			Sensitivity Analysis

Analysis Of Most Frequently Asked Questions

	Frequency/Amount of Times Asked in Exams	Probability will be asked in next exam
Process Costing	18	100%
Direct & Absorption Costing	17	94%
Standard Costing	12	67%
Joint & By-Product Costing	6	33%

New topics added that are most likely to be tested:

Relevant Costing

Sensitivity Analysis

Topics that have been omitted from new syllabus:

Contract Costing

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 value** 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 - m^2	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)

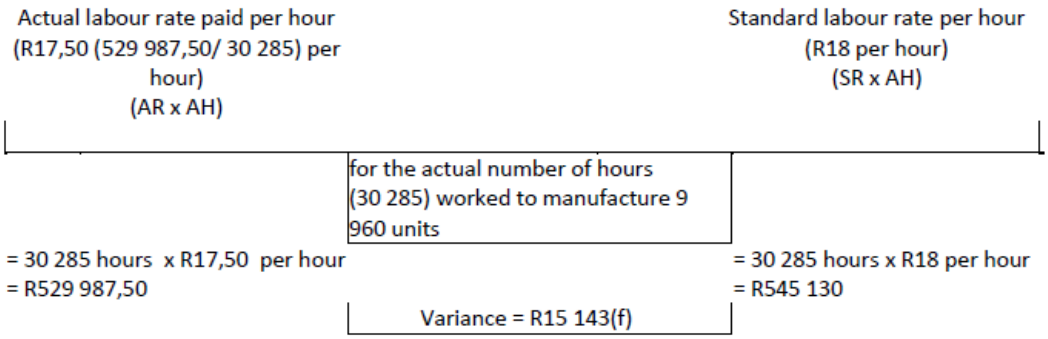
(b) & (c) Calculation of overhead allocation rates:

	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**	

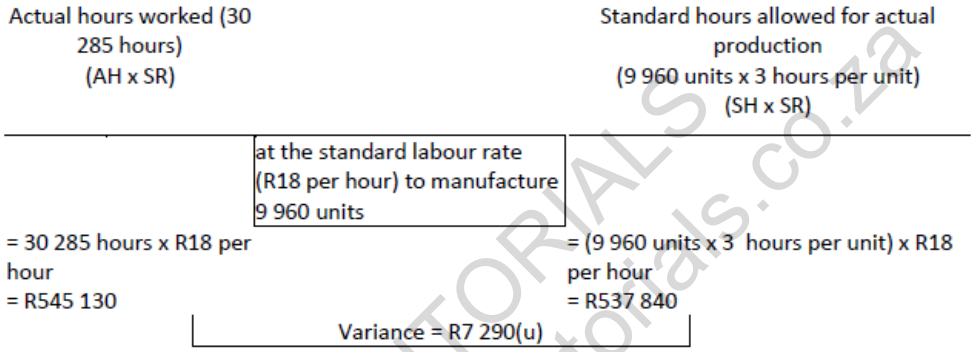
(d) & (e) Applied overheads

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

e) *-Labour rate variance*



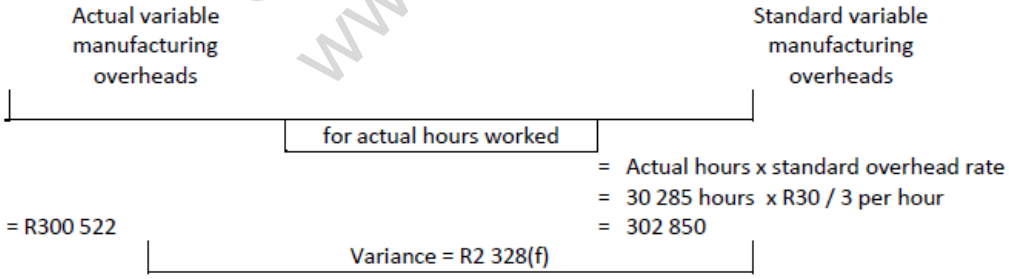
f)-Labour efficiency variance



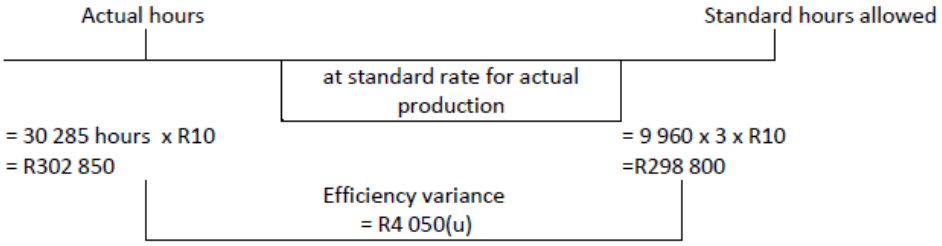
g)*Total labour variance*

(15 143 – 7 290,00) = 7 853(f)

h) *-Overhead rate variance*



i)-*Overhead efficiency variance*



j) -*Total Overhead variance*

2 328 – 4 050 = 1 722(u)

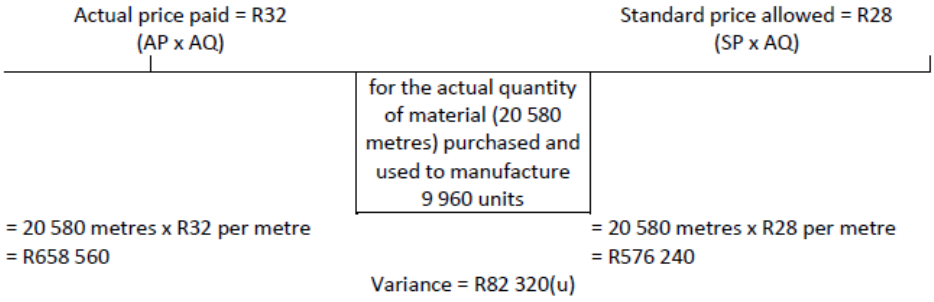
k) Total variances

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

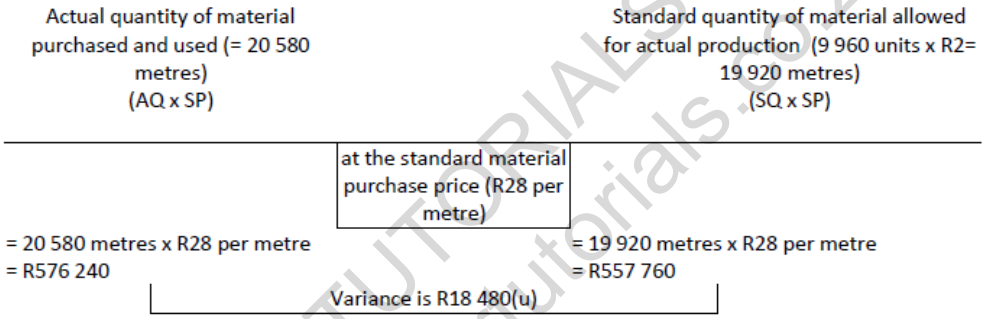
QUESTION 2:

a) R658 560 / 32
= 20 580 metres

b)- *Material price variance*



c)- *Material quantity variance*



d)- *Total material variance*

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

UNIVERSITY EXAMINATIONS

UNIVERSITEITSEKSAMENS

UNISA university of south africa

MAC2601

May/June 2013

PRINCIPLES OF MANAGEMENT ACCOUNTING

Duration : 2 Hours

100 Marks

EXAMINERS :

FIRST :	MR M RAMALEBA	MRS JM VERSTER
SECOND :	MR RK NZHINGA	PROF HM VAN DER POLL

Use of a non-programmable pocket calculator is permissible.

Closed book examination.

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue.

This paper consists of **13** pages.

N.B.:

1. This paper consists of EIGHT (8) 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 START ON A NEW (SEPARATE) PAGE.
6. The required percentage to pass this module is 50%.

PROPOSED TIMETABLE:

Question	Subject	Marks	Time in minutes
1	Multiple Choice Questions (MCQ)	20	24
2	Standard costing	10	12
3	Relevant costing	10	12
4	Sensitivity analysis	10	12
5	Nature and behaviour of costs (two independent parts)	15	18
6	Accounting for material, labour and overheads	10	12
7	The job costing system	10	12
8	The process costing system	15	18
		100	**120**

[TURN OVER]

QUESTION 1 (20 marks)(24 minutes)

Question 1 contains 10 multiple-choice questions of 2 marks each. Simply write down the number of each multiple-choice question (1.1 up to 1.10) with the letter of the correct option (A, B, C or D) next to each respective question number.

Question 1.1 is based on the following information:

Shanduka Ltd., based in Sandton, recorded the following purchase and issue of materials ("Gold") for the month of December 2012.

Date	**Transaction details**
December	
1 Opening inventory	300 units @ R6,50
3 Purchased	350 units @ R6,90
7 Issued	400 units to production

Industry information

Total costs for the industry pertaining to freight charges amount to R294 for orders placed in December. Due to Shanduka's massive market share, its share of the total freight charges is 50% of the industry total for December.

1.1

The value of inventory at 7 December, after issue to production of 400 units of Gold and using the **FIFO** method of valuation, is: (2)

A. R1 725
B. R2 562
C. R1 830
D. R 732

1.2

While sitting in the Library studying for your MAC2601 exam, a fellow student asked you to verify the following statements regarding inventory valuation:

(i) The issuing of materials at **weighted average** cost assumes that each batch taken from the storeroom is made up of the same quantities from each consignment in inventory at the date of issue.
(ii) The flow of materials dictates the flow of costs when the **FIFO** method is used.
(iii) During times of inflation, the use of the **FIFO** method will result in issues to production being made at "cheaper" prices.
(iv) The **weighted average** method divides the total cost of all materials of a particular class by the number of units on hand for that class in order to find the average price.

Indicate which of the above statements are true: (2)

A. Statements (ii) and (iii)
B. Statements (i), (iii) and (iv)
C. Statements (i) and (iv)
D. Statements (i) and (ii)

1.3

Product costs using the absorption costing method equals: (2)

A. Direct materials
B. Direct labour
C. Fixed costs
D. Variable and fixed manufacturing costs

1.4

The following information is available for the month ended 30 April 2013:

Opening inventory	10 000 units
Closing inventory	8 000 units
Net profit before tax (using absorption costing)	R280 000,00
Fixed cost per unit in opening inventory	R7,50
Fixed cost per unit in closing inventory	R9,00

If **direct costing** is used, the net profit before tax for the month ended 30 April 2013 will: (2)

A. Increase by R 3 000
B. Decrease by R 3 000
C. Increase by R75 000
D. Decrease by R72 000

1.5

Mangaung Ltd. is a Chinese conglomerate which recently established an office in Johannesburg. The CEO of the company, Frelimo Mudau, has recently confided in you that he struggles to understand activity-based costing. The CEO has requested you as a management accounting student to list the advantages and disadvantages of ABC for him.

i) Performance measurement can be carried out in more detail owing to the extensive research required to implement ABC.
ii) ABC is less expensive than the traditional costing method.
iii) It may result in more accurate price decisions if costs are used to set prices.
iv) If overhead cost is a low percentage of total cost, ABC will differ significantly from traditional costing.

Indicate which of the above statements are true: (2)

A. Statements (i) and (iii)
B. Statements (i) and (iv)
C. Statements (ii) and (iii)
D. Statements (i), (ii) and (iv)

1.6

You have been provided with the following statements regarding ABC:

i) ABC is more suitable for companies with larger amounts of indirect costs.
ii) The overhead rate will be the same irrespective whether ABC or traditional costing is used.
iii) In ABC, only manufacturing cost can be assigned to products.
iv) The business process can be redesigned if inadequacies are identified in ABC research.

Indicate which of the above statements are true: (2)

A. Statements (ii) and (iii)
B. Statements (i) and (iii)
C. Statements (i) and (iv)
D. Statements (iii) and (iv)

Questions 1.7 and 1.8 are based on the following information:

Chachingo Ltd. manufactures three joint products and one by-product (Dee) in a single process. The following are the actual results for March 2013:

	Aye Units	Bee Units	Cee Units	Dee Units
Production at 100% capacity	20 000	25 000	10 000	2 000

All joint products can be processed further into a superior product namely: Super Aye, Super Bee and Super Cee. Due to strict quality control at the end of the production process a rejection of 10% of the final product will occur if further processing is done after split-off point.

The following information is applicable **if products are processed further**:

	Super Aye R	Super Bee R	Super Cee R
Selling price per unit	20	15	25
Additional processing costs	4	4	5

Additional information:

1. Costs incurred in the joint process were: **R**
   - Direct material 238 500
   - Direct labour 143 100
   - Manufacturing overheads 95 400
2. By-products are sold for R3 per unit.

1.7

Assuming that a regular market exists for the by-product, the total joint costs to be allocated is: (2)

A. R477 000
B. R471 000
C. R386 600
D. R375 600

1.8

The profit attributed to product Super Bee if the total production is sold and the company uses the **physical standard method** to allocate joint cost is (round off to the nearest rand): (2)

A. R 23 409
B. R 60 909
C. R123 409
D. R160 909

1.9

You have been appointed as trainee management accountant at one of the investment banks in Sandton. The head of finance has requested you to present a document about budgeting and, in particular, to list its advantages and disadvantages.

You are considering the following statements:

(i) Budget variances can expose weak points in an organisation.
(ii) Forecasts are always 100% accurate.
(iii) Budgets do not help with cost control.
(iv) Budgets serve as a roadmap in terms of whether the organisation is achieving its goals.

Indicate which of the above statements are true: (2)

A. Statements (i) and (ii)
B. Statements (i), (ii) and (iii)
C. Statements (ii) and (iii)
D. Statements (i) and (iv)

[TURN OVER]

1.10

Whilst preparing for your MAC2601 exam, you overhear fellow students having a discussion about flexible (flexed) budgets.

They mentioned the following:

(i) A flexible budget is the approved plan of action for achieving a predetermined goal.
(ii) A flexible budget is the budget that calculates budgeted income and budgeted costs according to actual production volume.
(iii) For the preparation of a flexible budget, we need to calculate the fixed cost per unit based on actual production volume.
(iv) A flexible budget is the budget that restates the position if a variation from expected sales and production volume occurs on which the fixed budget is based.

Indicate which of the above statements are true: (2)

A. Statements (i) and (ii)
B. Statements (iii) and (iv)
C. Statements (i), (ii) and (iii)
D. Statements (ii) and (iv)

QUESTION 2 (10 marks)(12 minutes)

Zanral Ltd., a company based in Midrand, was recently awarded a contract by the National Department of Transport to supply etags. The company manufactures these etags to be fitted in cars. The company uses a standard costing system.

The standard cost per Zanral etag is as follows:

		R
Direct material: plastic	(10 kg @ R10 per kg)	100
Direct material: steel	(15 kg @ R16 per kg)	240
Direct labour	(20 hours @ R8 per hour)	160
Variable manufacturing overhead varying with hours worked (20 hours at R4 per hour)		80
Variable selling costs		22 000
Budgeted selling price per etag		1 200

Zanral Ltd. financial information for the year ended 31 December 2012 includes:

		R
Cost of direct material: plastic	(12 kg @ R13 per kg)	78 000
Cost of direct material: steel	(10 kg @ R12 per kg)	60 000
Cost of direct labour	(25 hours @ R12 per hour)	150 000
Variable selling costs		25 000
Selling Price per etag		1 350
Etags manufactured and sold		500 etags

Round off all variances to the nearest rand.

REQUIRED:

a. Calculate the labour rate variance (2)
b. Calculate the labour efficiency variance (2)
c. Calculate the variable manufacturing overhead efficiency variance for overheads that vary with hours worked (2)
d. Calculate the purchase price variance for direct material steel (2)
e. Evaluate whether the following statement about standard costing is **true** or **false**:

- Organisations use standard costing because actual performance can be controlled by measuring it against the standard, any variances can then be investigated, and corrective action taken. (2)

[TURN OVER]

QUESTION 3 (10 marks)(12 minutes)

Greyton Glass (Pty) Ltd. manufactures and sells two different glass products: vases and cutting boards. The management accountant has started to prepare the budget for the 2014 financial year and identified the following as the only limiting factor in the production process:

	Vases	Cutting boards	Total
Labour hours **required** to meet full regular demand for the product	1 500	1 000	2 500
Total labour hours **available**			1 600
Shortfall/Limitation in **labour hours**			900

The company will not be able to acquire any additional labour, but the labour hours available can be reassigned between products as required.

Additional information:

1. Budgeted fixed costs for the year are R480 000.
2. Vases are expected to sell for R30 per unit and cutting boards for R25 per unit.
3. Expected regular demand for 2014: 3 000 vases and 4 000 cutting boards.
4. Variable costs per unit are budgeted as follows:

	Vase R	Cutting board R
Variable manufacturing costs	8	12
Variable selling costs	3	1
Total variable costs	11	13

REQUIRED:

a. Determine the number of sales units per product (sales mix) that should be budgeted for for the coming financial year in order to maximise the budgeted profit of Greyton Glass (Pty) Ltd. (8)

b. If a potential once-off customer requested Greyton Glass (Pty) Ltd. to quote a total price for 200 vases, which one of the following statements will be **incorrect** with regard to setting a selling price for the 200 vases (simply write down the **number of the incorrect** statement):

(i) The budgeted fixed costs for the year (R480 000) are irrelevant to the pricing decision.
(ii) Greyton Glass (Pty) Ltd. will also have to take into account the net opportunity costs associated with giving up its regular sales.
(iii) Greyton Glass (Pty) Ltd. should also consider qualitative factors before they make a final decision about the price to be quoted.
(iv) If Greyton Glass (Pty) Ltd. sets the special order selling price at an amount lower than the minimum price that can be charged for the special order, this will put the company in a better overall cash position.

(2)

QUESTION 4 (10 marks)(12 minutes)

You are a business advisor. You have prepared the following probability distribution table for a client regarding all the possible effects of adding a specific new product line to the client's existing business (where "-R200 000" means a R200 000 decrease in profit, "+R200 000" means a R200 000 increase in profit, etc.):

Outcome value (effect on profit)	Probability (%)
-R200 000	10%
-R100 000	20%
0	20%
+R100 000	35%
+R200 000	15%

The overall profit of the client would be R2 000 000 if the new product line is **not** added.

REQUIRED:

(a) Calculate the expected value of the effect on the client's profit if the new product line is added. (3)

(b) Determine the individual outcome (effect on profit) that is most likely to occur. (1)

(c) Calculate what the relative decrease in the overall profit of the client will be should the new product line be added and the "-R100 000" outcome (a R100 000 decrease in profit) realise. (2)

(d) State whether the above probabilities will be classified as "biased" or "unbiased" if the client's management had to make a lot of assumptions in determining these probabilities. Simply write down either "Biased" or "Unbiased", depending on the correct answer. (1)

(e) Write down the correct term for each of the following definitions/descriptions within the context of decision trees:

(i) Something that takes place independent of management's actions, i.e. management cannot control what happens under the specific circumstances. (1)

(ii) A component of a decision tree, which connects one node to the following and which is represented by a solid line. (1)

(iii) The final result or outcome of all the events and decisions that lead to a specific point, before weighting with probabilities – also called a "possible outcome". (1)

QUESTION 5

THIS QUESTION CONSISTS OF TWO INDEPENDENT PARTS:

PART A (5 marks)(6 minutes)

Ebhayi Transport Services operates a fleet of delivery trucks in Port Elizabeth metropolitan area. A careful study by the company's cost accountant has determined that if a truck is driven 145 000 km during a year, the average semi-variable operating cost is R15,50 per km. If a truck is driven only 98 000 km during a year, the average semi-variable operating cost increases to R19,50 per km.

REQUIRED:

a. Use the high-low method to determine the variable cost per km (round off to two decimal places) and the total fixed costs (round off to the nearest hundred rand). (3)
b. Formulate a linear equation that explains and predicts cost behaviour. (1)
c. Forecast the total costs if an estimated 115 000 km is driven during a year. (1)

PART B (10 marks)(12 minutes)

MUSIKA (Pty) Ltd. is a small entertainment company operating from downtown Johannesburg.

MUSIKA sells one product called BIN10 music player. The following information is available for the year ended 31 March 2013 in which 16 000 units were manufactured and sold:

	Total R	Per unit R
Sales	560 000	35,00
Direct material	148 000	9,25
Direct labour	120 000	7,50
Conversion costs	215 000	
Fixed manufacturing overheads	55 000	

There was no inventory on hand at the beginning and end of the month. Variable manufacturing overheads are based on production.

REQUIRED:

a. Calculate variable manufacturing overheads in total. (2)
b. Calculate total contribution and contribution ratio. Round off to two decimals in your calculations. (2)
c. Prepare a contribution statement of comprehensive income if 20 000 BIN10 are manufactured and sold. (3)
d. Use the same information as in (c) above to calculate net profit if the selling price increases by R5, total fixed costs increases by R5 000 and sales volume decreases by 10%. (3)

QUESTION 6 (10 Marks)(12 minutes)

Gidima Ltd., a company based in Centurion, was recently awarded a contract by the national Department of Home Affairs to supply smart ID cards to replace the current version of identity books used in South Africa.

The company is excited about the prospects of making super profits from this contract as evidenced by recent South African census population numbers. Gidima Ltd. has requested you to assist them with the computation of the budgeted cost of each smart ID card as well as the budgeted profit. The company uses the absorption costing method of inventory valuation.

The budgeted cost of a smart ID card is made up as follows:

Direct materials: Specialised plastic	2,5 m @ R3,50 per metre
Direct labour	2 hours
Variable manufacturing overhead recovery rate	R1,50 per hour
Selling price per smart ID card	R125
Variable selling costs	

(Variable selling cost is 5% of selling price per smart ID card and varies with units sold)

Additional information:

- Variable manufacturing overheads varies with labour hours worked.
- The total budgeted fixed manufacturing overheads for the period amount to R550 000. Fixed manufacturing overheads are recovered based on direct labour hours. The average long run capacity of the plant is 20 000 ID cards per annum.
- Direct labour is budgeted at R8 per hour.
- There was no budgeted opening or closing inventory for the period.

REQUIRED:

a. Calculate the budgeted **manufacturing cost** of one smart ID card (rounded to two decimal places). (5)

b. Calculate the total budgeted profit if Gidima Ltd. manufactures and supplies 9 000 smart ID cards to the Department of Home Affairs. (5)

QUESTION 7 (10 marks)(12 minutes)

Mboni Tshivhasa manufactures clay pots which she sells mostly to foreign tourists at the Punda Maria Gate of the Kruger National Park. Her clay pots are painted with enamel paint after being burnt in an open straw fire. Each job is given a unique African name that identifies the job.

Mboni wants you, as a management accountant to help her determine the cost of each job using the job costing system.

The following balances were extracted from the books of Mboni Tshivhasa on 1 April 2013:

	R
Direct material	90 000
Bank	3 200
Sales expenses	3 600

April 2013 costs have been allocated to jobs as follows:

Job	Material R	Wages R
Khali	25 200	16 800
Mvuvhelo	32 400	20 160
Lusiko	18 700	9 360
Mutondo	2 900	-

Additional information:

1. Actual manufacturing overheads costs incurred during the month are R72 600.
2. Mark-up of 50% is added to the total of each job's cost to arrive at the selling price for the job.
3. Overheads are applied to production using the rate of 90% of direct material costs.
4. Job Khali, Mvuvhelo and Lusiko were completed and transferred to the finished goods account.
5. Jobs Khali and Lusiko were sold on 30 April 2013.

REQUIRED:

a. Prepare the following general ledger accounts, properly balanced:

- Direct material control (2)
- Manufacturing overhead control (2)
- Work-in-process control (3)
- Finished Goods (1)

b. Calculate the profit or loss of Mboni Tshivhasa for the month of April 2013. (2)

[TURN OVER]

QUESTION 8 (15 marks)(18 minutes)

Bontebo (Pty) Ltd. manufactures one product in a single process and uses a process costing system. The following information is available for March 2013:

	Units
Work-in-process (1 March 2013) – 60% completed	12 000
Started in the current month	38 000
Completed in the current month	35 000
Work-in-process (31 March 2013) – 20% completed	10 000

Additional information:

1. Bontebo (Pty) Ltd. applies the FIFO method of inventory valuation.
2. Wastage takes place when the process is 30% complete.
3. Raw materials are added at the beginning of the process and conversion takes place evenly throughout the process.
5. Normal losses are estimated as 10% of the units that reach the wastage point.
6. The following cost data is available for March 2013:

	R
Work-in-process (1 March 2013)	
Material	64 800
Conversion	18 720
Current production cost	
Material	209 000
Conversion	118 940

REQUIRED:

a. Prepare the quantity statement for March 2013. (7)
b. Prepare the production cost statement for March 2013. (3)
c. Calculate the Rand value of the normal loss in terms of material only. Round off amounts to the nearest Rand. (1)
d. Calculate the total value of closing WIP that will be included in the cost allocation statement. (4)

MAC2601
May/June 2013: Suggested solution

QUESTION 1

1.1 – C

FIFO Method of valuation

Date	Receipts			Issues			Balance		
December	Quantity	Price	Amount	Quantity	Price	Amount	Quantity	Price R	Amount R
1							300	6.50	1950
3	350	7.32	2562				300 350	6.50 7.32	1950 2562
7				300 100	6.50 7.32	1950 732	250	7.32	1830

Cost of purchases of 350 units

350 units at R6.90 = R2 415
+Freight costs: R294*50%=R147
Total: 2562
R2 562/350 units = R7,32

Therefore option C is correct.

1.2 - B
1.3 - D
1.4 - A

	R
Fixed cost in opening stock (10 000 x R7.50)	75 000
Fixed cost in closing stock (8 000 x R9.00)	72 000
Difference	3 000

1.5 - A

1.6 - C
1.7 - B

	R
Direct material	238 500
Direct labour	143 100
Manufacturing overheads	95 400
Less: proceeds from by-product	(6 000)
	471 000

[TURN OVER]

1.8 - A

	R
Sales (25 000 x 90% x R15)	337 500
Less: Joint cost	(214 091)[1]
Less: Further processing cost (25 000 x R4)	(100 000)
Profit	R23 409

[1] R471 000 x 25 000/55 000 = R214 091

1.9 - D

1.10 - D

QUESTION 2

a. **Labour rate variance**	**R**
Actual hours @ actual rate (25*R12*500)	150 000
Actual hours @ standard rate (25*R8*500)	100 000
Unfavourable variance:	50 000

b. **Labour efficiency variance**	**R**
Actual hours @ standard rate (25*R8*500)	100 000
Standard hours @ standard rate (20*R8*500)	80 000
Unfavourable variance:	20 000

c. **Overhead efficiency variance**	**R**
Actual hours @ standard rate (25*R4*500)	50 000
Standard hours at standard rate (20*R4*500)	40 000
Unfavourable variance:	10 000

d. **Purchase price variance for steel**	**R**
Actual quantity @ actual price (500*10*R12)	60 000
Actual quantity @ standard price (500*10*R16)	80 000
Favourable variance	20 000

e. **True**

[TURN OVER]

QUESTION 3

(a) Number of sales units per product (sales mix) to maximise budgeted profit

Refer to the "steps" on page 177 of the study guide:

Step 1 was already performed as part of the information given.

Step 2: Contribution per unit

	Vase	Cutting board
Selling price	30^	25^
Less: Total variable costs	(11) ^	(13) ^
Contribution per unit	R19	R12

Step 3: Contribution per limiting factor

	Vase	Cutting board
Contribution per unit	19^principle	12
Multiplied by: Units per labour hour 3 000 / 1 500 = 2 4 000 / 1 000 = 4	2	4
	R38	R48

Step 4: Order in which limiting factor should be used in manufacturing:

1. Cutting boards (R48 per labour hour)
2. Vases (R38 per labour hour)

Step 5: Allocate the available labour hours until none left:

	Labour hours
Labour hours available	1 600
1. Cutting boards	1 000
Remaining	600
2. Vases	600
	-

Step 6: Number of units to be manufactured

1. Cutting boards (1 000 x 4) 4 000 units
2. Vases (600 x 2) 1 200 units

(b) (iv)

QUESTION 4

(a)

Outcome value (effect on profit)	Probability (%)	Weighted value
-R200 000	10%	-R20 000
-R100 000	20%	-R20 000
0	20%	0
+R100 000	35%	+R35 000
+R200 000	15%	+R30 000
Total	100%	R25 000

Therefore, the expected value is R25 000.

(b) +R100 000 (the outcome with the highest probability)

(c) $\frac{A2 - A1}{A1} \times \frac{100}{1}$

$= \frac{(2\,000\,000 - 100\,0000) - 2\,000\,000}{2\,000\,000}$

$= \frac{1\,900\,000 - 2\,000\,000}{2\,000\,000}$

= -100 000 / 2 000 000
= -5%
= 5% decrease

OR SIMPLY

- 100 000 / 2 000 000 = -5% = 5% decrease

(d) Biased

(e) (i) Uncontrollable event
(ii) Branch
(iii) Conditional profit

QUESTION 5

PART A

a. Variable cost per unit = $\frac{\text{R2 247 500 (145 000 x R15,50) – R1 911 000 (98 000 x R19,50)}}{\text{145 000 - 98 000}}$

= $\frac{\text{R336 500}}{\text{47 000}}$

= R7,16

Total fixed costs (@ *Highest observation*) = R2 247 500 – 1 038 200 (145 000 x R7,16)
= R1 209 300

OR

Total fixed costs (@ *Lowest observation*) = R1 911 000 – R701 680 (98 000 x R7,16)
= R1 209 320, say R1 209 300*

*rounded off

b. y = R1 209 300 + R7,16x

c. y = R1 209 300 + R7,16 (115 000)
= R1 209 300 + R823 400
= R2 032 700

PART B

a.

Conversion costs = Direct labour + Manufacturing overheads
R215 000 = R120 000 + x
x = R215 000 – R120 000
x = R95 000
Variable man. overheads = Total man. overheads – Fixed man. overheads

Answer: R95 000 – R55 000 = R40 000

b.

	R	
Sales	560 000	**OR** R35 – 19,25[#]
Less: Variable costs (R148 000 +R120 000 + R40 000)	(308 000)	=R15,75
Contribution	252 000	

Contribution ratio = $\frac{\text{Contribution}}{\text{Sales}} \times \frac{100}{1}$

[#] R9,25 + R7,50+R2,50*

$\frac{\text{R252 000}}{\text{R560 000}} \times \frac{100}{1}$ **OR** $\frac{\text{R15,75}}{\text{R35}} \times \frac{100}{1}$

45% 45%

QUESTION 5 (continued)

c.	**R**
Sales (20 000 x R35)	700 000
Less: Variable costs	(385 000)[1]
Contribution	315 000
Less: Fixed costs	(55 000)
Net profit	260 000

[1] R185 000 (20 000 x R9,25) + R150 000(20 000 x R7,50) + R50 000 (20 000 x R2,50*)

* R40 000/16 000 = R2.50

d.	**R**
Sales (18 000(20 000 x .90) x R40 (R35+R5)	720 000
Less: Variable costs	(346 500)[2]
Contribution	373 500
Less: Fixed costs (R55 000 + R5 000)	(60 000)
Net profit	313 500

[2]R166 500 (18 000 x R9,25) + R135 000(18 000 x R7,50) + R45 000 (18 000 x R2,50*)

OR

Contribution: R40 – R19,25 = R20,75
R20,75 x 18 000 = R373 500 – R60 000 = R313 500

QUESTION 6

a. Budgeted cost per smart id card

9 places; 5 marks

	R
Direct Materials (2.5m^ *R3.50^)	8,75
Direct labour (2^*R8^)	16,00
Variable Manufacturing overhead (2^*R1.50^)	3,00
Variable selling costs (not part of product costs) ^for not including VSC	-
Fixed cost per unit (2 ^ *13,75√)	27,50
Total budgeted smart ID card cost per unit	**55.25**

If they have not shown the zero for the VSC, you can still award the mark for the "^for not including VSC" if it is clear that the VSC has not been included anywhere and they have totalled/attempted to total their costs (which does not include the VSC). This also applies to the alternative methods.

Fixed cost per labour hour

Calculation of the fixed overhead recovery rate

550 000/ (20 000*2) =R13.75 per labour hour

Possible alternative 1: 9 places; 5 marks

DM(175 000^ / 20 000^)	8,75
DL (320 000^ / 20 000^)	16,00
VMOH (60 000^ / 20 000^)	3,00
VSC ^for not including VSC	-
FMOH (550 000^ / 20 000^) +^for having both 550 000 and /20 000	27,50
	55,25

Possible alternative 2: 9 places; 5 marks

175 000	^
320 000	^
60 000	^
-	^for not including VSC
550 000	^
1 105 000	

1 105 000 / 20 000^^^^ = 55,25

There could be more alternatives – give marks accordingly, please.

b. Total budgeted profit if Gidima Ltd manufactures and supplies 9000 smart ID cards

10 places; 6 marks limited to a max of 5

	R
Sales (9000^* R125^)	1 125 000
Less:	
Variable cost of smart ID cards (9000^*R27.75^principle)	249 750
Variable selling costs (9000^ *R6.25√)	56 250
Fixed costs allocated to production (9000^*13.75^principle*2^)	247 500
Fixed costs under-recovered (550 000 – 247 500)	302 500√
Total profit	269 000

Possible alternative 1 of many

Sales (9000^* R125^)	1 125 000
Less:	
Variable costs (9 000√ x 34 ^principle√)	
Fixed costs	550 000√√^
Total profit	269 000

The marks for the 34 or whatever the student has, is made up as follows:
^principle for using the variable manufacturing costs from (a), even if wrong in (a)
√ for adding the 6,25 to their variable manufacturing costs from (a)
^^ for multiplying by 9 000 (a full mark, as they have effectively both the 9 000 for variable manufacturing costs and the 9 000 for variable selling costs combined into one

Possible alternative 2 of many

Sales (9000^* R125^)	1 125 000
Less:	
Costs (61,50√^principle√^ x 9 000√^)	553 500
Underrecovery (550 000 – 247 500)	302 500√
Total profit	269 000

The marks for the 61,50 or whatever the student has, is made up as follows:
^principle for using the variable manufacturing costs from (a), even if wrong in (a)
^principle for using the fixed manufacturing overhead rate per hour from (a), even if wrong in (a)
^ for incorporating multiplication of the fixed overhead rate per hour by two
√ for including the 6,25 in the total cost per unit in (b)
^^^ for multiplying by 9 000 (one and a half marks, as they have effectively all three the required 9 000's (for variable manufacturing costs, variable selling costs and fixed costs combined into one)

Possible alternative 3 of many

Sales (9000^* R125^)	1 125 000
Less:	

Manufacturing costs (9 000√ x 55,25√principle^)	
Non-manufacturing costs (9 000^ x 6,25√)	
Underrecovery (550 000 – 247 500)	302 500√
Total profit	269 000

The marks for the 55,25 or whatever the student has, is made up as follows:
^principle for using the variable manufacturing costs from (a), even if wrong in (a)
^principle for using the fixed manufacturing overhead rate per hour from (a), even if wrong in (a)
^ for incorporating multiplication of the fixed overhead rate per hour by two
^^ for multiplying by 9 000 (one mark, as they have effectively both the required 9 000's (for variable manufacturing costs and fixed costs combined into one)

There could be more alternatives – give marks accordingly, please.

QUESTION 7

a. General Ledger

DirectMaterial

		R		R
01/04/2013	Opening balance b/d	90 000	Work-in-process	79 200[1]
			Balance c/d	10 800
		90 000		90 000
01/05/2013	Balance b/d	10 800		

[1] R25 200 + R32 400 + 18 700 + R2 900

Manufacturing overheads

		R		R
30/04/2013	Bank	72 600	Work-in-process	71 280
			Cost of sales	1 320
		72 600		72 600

[2] R79 200 x 90%

Work-in-process

		R		R
01/04/2013	Opening balance b/d	-	Finished goods	191 290
	Material	79 200	Balance c/d	5 510
	Wages	46 320[3]		
	Man. Overheads	71 280		
		196 800		196 800
01/05/2013	Balance b/d	5 510		

[3] R16 800 + R20 160 + R9 360

Fin.Goods

		R		R
30/04/2013	Work-in-process	191 290	Cost of sales	109 570[4]
			Balance c/d	81 720
		191 290		191 290
01/05/2013	Balance b/d	81 720		

[4] Khali: R84 680 (25 200+16 800 + 22 680) + Lusiko: R44 890 (18 700+9 360+ 16 830) = R109 570

b. Profit and loss for the month of April

	R
Sales (R 109 570 x 150%)	164 355
Less: Cost of sales	(110 890)#
Gross profit	53 465
Less: sales expenses	(3 600)
Profit	49 865

#R109 570 + R1 320 = R110 890

QUESTION 8

BONTEBO (PTY) LTD.
Quantity statement for March 2013

Physical units			Equivalent units			
Input		Output	Raw materials		Conversion cost	
(units)	Details	(units)	Units	%	Units	%
12 000	WIP - opening					
38 000	Put into production					
	Completed from:					
	- Opening inventory①	12 000	-	-	④4 800	40
	- Current production③	23 000	23 000	100	23 000	100
	Completed and transferred	35 000	23 000		27 800	
	Normal loss②	2 800	②2 800	100	②840	30
	Abnormal loss③	2 200	2 200	100	⑤660	30
	WIP - closing	10 000	10 000	100	⑥2 000	20
50 000		50 000	38 000		31 300	

b. **BONTEBO (PTY) LTD.**
Production cost statement for March 2013

	Total		Material		Conversion cost
	R				
Opening WIP	83 520				
Current production cost	327 940		209 000		118 940
Total	411 460				
Equivalent units per quantity statement			38 000		31 300
Equivalent cost per unit	9,30	=	R5,50	+	R3,80

c. Calculate the rand value of the normal loss in terms of material only.

NLM
= 2 800 x R5,50
= R15 400

d. Closing WIP for cost allocation statement

		R
Closing WIP		62 600
Material	(5,50 x 10 000)	55 000
Conversion cost	(3,80 x 2 000)	7 600
Normal loss		⑦0

OR

Dr		Cr	
WIP			
	R		R
1/3 Opening balance	83 520	31/3 Production account	83 520
31/3 Production account (55 000 + 7 600 + 0)	62 600	Closing balance	62 600
	146 120		**146 120**
1/4 Opening balance	62 600		

Explanatory notes

① 12 000 (no adjustment, as 60% is not smaller than 30%)

② (50 000 – 12 000 – 10 000) = 28 000.

28 000 x 10% = 2 800.

Opening WIP passed the wastage point in the previous period and closing WIP will only pass the wastage point in the next period; therefore we deduct both of these in the normal loss unit calculation. Abnormal losses occur at the normal wastage point, as no information was given to the contrary, and therefore no adjustment for these units should be made.

2 800 x 100% = 2 800

2 800 x 30% = 840

③ Balancing figure

④ (100% - 60%) x 12 000 = 4 800

⑤ 2 200 x 30% = 660

⑥ 10 000 x 20% = 2 000

⑦ No portion of the normal loss will be allocated to closing WIP, as closing WIP has not yet passed/reached the wastage point [20% < 30%].

Question	Subject	Marks	Time in minutes
1	Process costing	20	24
2	Standard costing	20	24
3	Direct and absorption costing	20	24
4	Sundry questions (three independent parts)	40	48
		100	120

QUESTION 1 (20 marks)(24 minutes)

Nandoni Limited, a South African based manufacturer, manufactures a single product that is used in a variety of electrical products, in one process. The following information is available for September 2010:

Work-in-process - 1 September 2010 .....24 000 units
- Material - 100% complete R200 000
- Conversion costs - 95% complete R607 200

Material issued for 44 000 units.....R888 560
Conversion costs.....R2 033 096
Units completed.....50 000 units

Work-in-process - 30 September 2010 .....10 000 units
- Material - 100% complete.....
- Conversion costs - 75% complete.....

Additional information:

1. Material is added at the beginning of the process. Conversion costs are incurred evenly throughout the process.
2. Normal spoilage is estimated at 10% of input that reaches the point of spoilage.
3. Losses occur at the end of the process.
4. Stock is valued according to the first-in first-out method.

REQUIRED:

(a) Prepare the following statements for September 2010:

(i) Quantity statement (6)
(ii) Production cost statement (3)
(iii) Cost allocation statement (6)

(b) Prepare the quantity statement if normal spoilage occurs when the process is 80% complete. (5)

QUESTION 2 (20 marks)(24 minutes)

Birming Limited uses a standard costing system and manufactures a single product, Craze-E Toy. The management of Birming Limited has compiled the following Standard Costs Information Sheet:

Craze-E Toy
Product Standard Costs for the month ended 31 October 2010:

	Material code	Quantity (kg)	Standard price per kg	Total
Direct material	AV-736	5	R10	R50
		Total material costs		**R50**
	Job number	**Standard hours**	**Standard rate per hour**	
Direct labour	1	3	R15	R45
		Total labour costs		**R45**
Manufacturing overheads (variable with production)	**Standard variable manufacturing overhead rate (per unit of production)**			
	?			**?**
	Total manufacturing overheads			**?**
TOTAL STANDARD COSTS				**?**

Additional information:

1. No fixed manufacturing overheads were incurred by Birming Limited.

2. The following information is available regarding the variable manufacturing overheads of product Craze-E:

   Budget:
   Variable manufacturing overheads (vary with **production**) — R54 000
   Normal capacity — 12 000 units

   Actual results:
   Variable manufacturing overheads (vary with **production**) — R58 000
   Production — 11 500 units

3. Actual material and labour costs for the month ended 31 October 2010 were as follows:
   Direct material — R632 500
   Direct labour (35 640 labour hours) — R516 925

REQUIRED:

Calculate the following for October 2010 (round off amounts to two decimal places):

(a) The standard variable manufacturing overhead rate (1½)

(b) The variable manufacturing overheads rate variance (in respect of overheads that vary with production) (2½)

QUESTION 2 (continued)

(c) The variable manufacturing overheads efficiency variance (in respect of overheads that vary with production) (1)

(d) The total variable manufacturing overheads variance (in respect of overheads that vary with production) (1)

(e) The total material variance (2½)

(f) The labour efficiency variance (3)

(g) The labour rate variance (3)

(h) The total labour variance (1)

(i) The standard selling price if 11 500 units were actually sold at R132 per unit, with a selling price variance of R51 000 (unfavourable) (2½)

(j) The amount of direct labour costs to be recorded in the **Production Account** of the general ledger and whether the account has to be debited or credited with this amount (2)

QUESTION 3 (20 marks)(24 minutes)

The following information was extracted from the accounting records of Poenie Ltd for the year ended 31 August 2010 and their 2011 budget:

	2010 Actual	**2011 Budget**
Total manufacturing cost per unit	R15,15	???
Completed units beginning of the year	4 000	8 000
Manufactured for the year	35 000	???
Sales for the year	???	42 000
Fixed costs		
Production	???	R325 000
Selling and administrative	???	R158 000
Variable cost per unit		
Production	R10,20	R11,00
Selling and administrative	R 1,25	R 1,40
Stock valuation method	FIFO	FIFO

Poenie Ltd
Budgeted Income statement for the year ended 31 August 2011

	R
Sales	1 050 000
Less: Cost of sales	803 918
Opening stock	121 200
Production costs	721 000
Less: Closing stock	(38 282)
Gross profit	246 082
Less: Selling and administrative costs	(216 800)
Net profit before tax	**29 282**

QUESTION 3 (continued)

REQUIRED:

(a) What is the method of cost determination used in the income statement given above, direct or absorption costing? (1)

(b) Calculate the budgeted number of units manufactured during 2011. (3)

(c) Calculate the budgeted number of units on hand at 31 August 2011. (2)

(d) Draft the budgeted income statement for the year ended 31 August 2011 using the direct costing method. (10)

(e) Reconcile the difference in net profit before tax between the income statement given, and the income statement in (d). (4)

QUESTION 4

THIS QUESTION CONSISTS OF THREE INDEPENDANT PARTS:

PART A (15 marks)(18 minutes)

New Inventions Limited is a construction company. On 1 March 2009 the company entered into a contract with Mino Limited to build an office block for R25 000 000. On 15 May 2009 an additional contract was entered into for extras amounting to R1 500 000. The cost accounting section of New Inventions estimated that the costs to complete the contract will be R23 000 000.

The following information is applicable to the year ended 28 February 2010:

Mino Limited paid out the following amounts:

- 15 April 2009 – R2 250 000
- 15 June 2009 – R2 250 000
- 15 August 2009 – R2 250 000
- 15 October 2009 – R2 250 000
- 15 February 2010 – R2 250 000

These amounts are 90% of the work certified.

Material:

- Since the start of the contract, material to the value of R9 400 000 was issued.
- On 28 February 2010 stock with a cost price of R860 000 was on hand.
- During January 2010, stock with a cost price of R320 000 was sold for R352 000.

From 1 March 2009 until 28 February 2010, an amount of R3 300 000 was spent on direct labour and R700 000 on overheads.

Machinery:

Machinery to the value of R4 600 000 was transferred to the building site. The value of the machinery on 28 February 2010 was R2 300 000. During November 2009, obsolete machinery were sold for R800 000.

QUESTION 4: PART A (continued)

REQUIRED:

(a) Calculate the total costs to date. (7)

(b) Calculate the total estimated profit on the contract. (2)

(c) Calculate the profit for the year ended 28 February 2010 that should be transferred to the income statement if the percentage of completion method is applied to determine the profit according to the ratio of costs to date to total estimated costs. (6)

PART B (15 marks)(18 minutes)

WRC Limited manufactures picture frames. The following information was extracted from the budget for the year ended 30 September 2010:

Break-even Quantity	20 000 units
Selling price per picture frame	R50,00
Variable production cost	
Direct material	R15,00
Direct labour	R12,00
Overheads	R 8,00
Fixed costs	???
Marginal income	???
Completed units 01/10/2009	5 000
Completed units 30/09/2010	2 000
Tax rate	28%
Stock valuation method	FIFO(First-in-first-out)

REQUIRED:

(a) Calculate the marginal income per picture frame. (2)

(b) Calculate the fixed cost for the year. (2)

(c) Calculate the break-even-value. (2)

(d) Management aims to achieve an after-tax profit of R1 080 000. How many units would have to be sold if the selling price remained the same? (5)

(e) If the units sold in (d) were achieved, how many units would WRC have to manufacture? (2)

(f) Calculate the margin of safety ratio if the expected sales is the same as in (d). (2)

QUESTION 4 (continued)

PART C (10 marks)(12 minutes)

Colourful Stuff (Pty) Limited manufactures three products and uses an ABC system. The names of the three products are Pink, Blue and Yellow. The entity uses the same machinery (machine Blicks for assembly and machine Max for compression) to manufacture all three products. Pink and Blue tend to put a lot of pressure on machine Blicks and therefore the technician needs to inspect the machine frequently.

Manufacturing overheads for the month of October 2010 were as follows:

	R
Assembly	750 000
Compression	840 000
Indirect labour (technician salary)	12 000
TOTAL	**1 602 000**

Additional information:

1. The following information for October 2010 has been obtained from the manufacturing department:

Machine	Number of set-ups	Number of technician inspections
Blicks	10	5
Max	8	-
TOTAL	**18**	**5**

2. The following information also relates to October production:

Product	Units manufactured	Number of set-ups required Assembly	Number of set-ups required Compression	Number of technician inspections necessitated
Pink	8 000	3	3	2
Blue	5 000	5	4	2
Yellow	3 000	2	1	1
TOTAL	**16 000**	**10**	**8**	**5**

3. Management has determined that the number of set-ups of the relevant machine is an appropriate cost driver regarding the activities of assembly and compression and that the number of technician inspections is an appropriate cost driver for the inspection activity. All activity costs were deemed material in size and justified separate treatment. The only task of the technician is to inspect the assembly machine.

REQUIRED:

Calculate the following (round off all amounts to two decimal places):

(a) The activity rates to be used for:
- Assembly (1)
- Compression (1)
- Inspection activity (1)

(b) The overhead costs per unit for each of the products (7)

SUGGESTED SOLUTION TO SIMULATED EXAMINATION:

QUESTION 1 (20 marks)

NANDONI LIMITED

(a)(i) Quantity statement for September 2010

			Equivalent production			
Input	**Details**	**Output**	**Material**		**Conversion Costs**	
Units		**Units**	**Units**	**%**	**Units**	**%**
24 000	Work-in-progress 1 September 2010					
44 000	Put into production					
	Completed from:					
	Opening stock	21 600[1]	-	-	1 080	5
	Current production	28 400[3]	28 400	100	28 400	100
	Completed and transferred	50 000	28 400		29 480	
	Spoilage					
	Normal	5 800[2]	5 800	100	5 800	100
	Abnormal	2 200[3]	2 200	100	2 200	100
	Work-in-progress 30 September 2010	10 000	10 000	100	7 500	75
68 000		68 000	46 400		44 980	

[1] 24 000 x 90%
[2] (68 000-10 000) x 10%
[3] Balancing figure

(ii) Production cost statement:

	Total	**Material**	**Convention costs**
	R	**R**	**R**
Work-in-progress- 1 September 2010	807 200	-	-
Current costs	2 921 656	888 560	2 033 096
	3 728 856	888 560	2 033 096
	= 64,35	888 560/46 400 = 19,15	2 033 096/44 980 = 45,20

(iii) Allocation statement:

	R
Work-in-progress 1 September 2010	807 200
Material (given)	200 000
Conversion costs (given)	607 200
Current production	2 233 856
Material (28 400 x 19,15)	543 860
Conversion costs (29 480 x 45,20)	1 332 496
Cost of normal loss allocated	357 500[1]
Cost of production transferred	3 041 056
Abnormal loss	157 300
Material (2 200 x 19,15)	42 130
Conversion costs (2 200 x 45,20)	99 440
Cost of normal loss allocated	15 730[1]
Work-in-progress 30 September 2010	530 500
Material (10 000 X 19,15)	191 500
Conversion costs (7 500 X 45,20)	339 000
Total costs to be allocated as per production cost statement (calc.(a) (ii))	3 728 856

[1]First calculate normal loss as follows: 5 800 x 64,35 = R373 230

This normal loss of R373 230 is allocated as follows:

	Units	Ratio	Amount allocated
Units completed and transferred	50 000	(50 000/52 200 x 373 230)	357 500
Abnormal loss	2 200	(2 200/52 200 x 373 230)	15 730
Total	52 200		373 230

(b) Quantity statement for September 2010

Input Units	Details	Output Units	Equivalent units			
			Material		Conversion costs	
			Units	%	Units	%
24 000	Work -in -process 1 September 2010					
44 000	Put into production					
	Completed from					
	- Opening stock	24 000[1]	-	-	1 200	5
	- Current production	26 000[2]	26 000	100	26 000	100
	Completed and transferred	50 000	26 000	100	27 200	100
	- Normal Loss	3 400[3]	3 400	100	2 720	80
	- Abnormal Loss	4 600[2]	4 600	100	3 680	80
	Work-in-process 30 September 2010	10 000	10 000	100	7 500	75
68 000		68 000	40 600		38 380	

[1] Opening work-in-progress reached the wastage point last month
[2] Balancing figure
[3] (44 000 -10 000) x 10% = 3 400

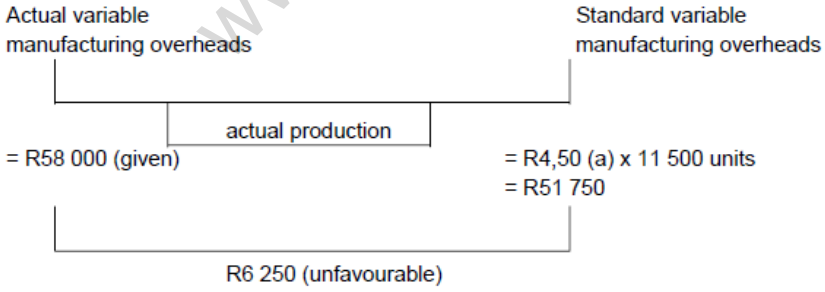
QUESTION 2 (20 marks)

BIRMING LIMITED

(a) The standard variable manufacturing overhead rate:

Budgeted variable manufacturing overheads/Normal capacity
= R54 000 / 12 000 units
= R4,50 per unit

(b) The variable manufacturing overheads rate variance (in respect of overheads that vary with production)



(c) The variable manufacturing overheads efficiency variance (in respect of overheads that vary with production)

R0 (always)

OR

Actual units produced at standard variable manufacturing overheads rate	Units produced at standard variable manufacturing overheads rate
= 11 500 units (given) x R54 000/12 000 units	= 11 500 units x R4,50 per unit
= 11 500 units x R4,50 per unit	= R51 750
= R51 750	

R0 (always)

(d) The total variable manufacturing overheads variance (in respect of overheads that vary with production)

Total variance = Rate variance + Efficiency variance
= R6 250(unfavourable)(b) + R0(c)
= R6 250(unfavourable)

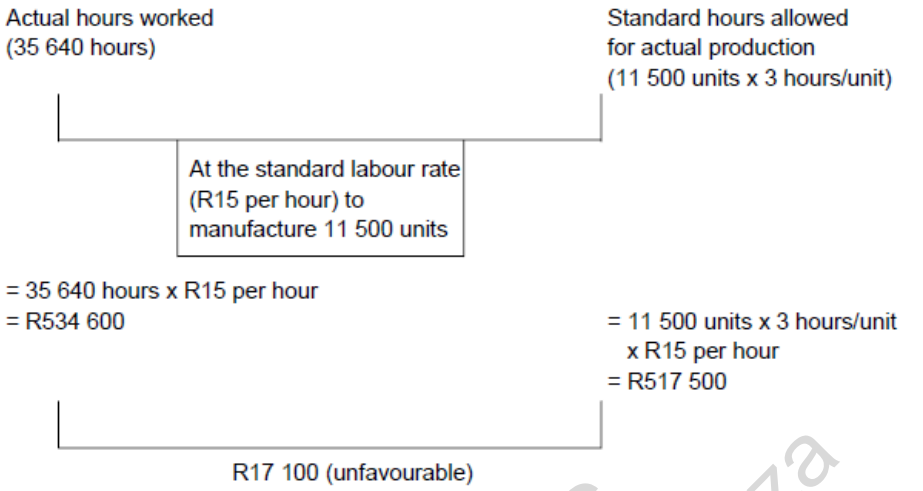
(e) The total material variance

Actual costs	Standard quantity allowed at standard price
= R632 500 (given)	= 11 500 units x 5kg x R10/kg
	= R575 000

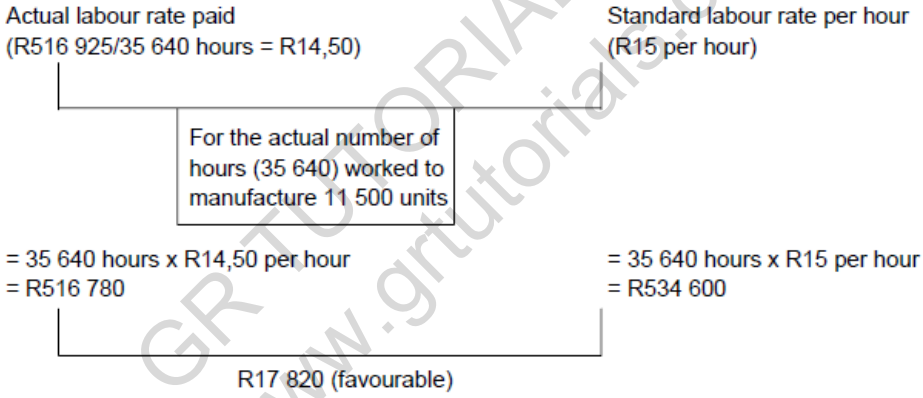
actual production

R57 500 (unfavourable)

(f) The labour efficiency variance



(g) The labour rate variance



(h) The total labour variance

Total labour variance = Labour rate variance + Labour efficiency variance
= R17 820(favourable) + R17 100(unfavourable)
= R720(favourable)

(i) The standard selling price if 11 500 units were actually sold at R132 per unit, with a selling price variance of R51 000 (unfavourable)

Actual sales income	Actual quantity sold at standard selling price
= 11 500 units x R132/unit	Let standard selling price = SP
= R1 518 000	11 500 units x SP

R51 000 (unfavourable)

Thus:

R51 000	= R1 518 000 + (11 500 x SP)
11 500 x SP	= R1 518 000 + R51 000
11 500 x SP	= R1 569 000
SP	= R1 569 000/11 500
SP	= R136,43 per unit

(j) The amount of direct labour costs to be recorded in the Production Account of the general ledger and whether the account has to be debited or credited with this amount.

Debit the standard number of hours allowed x standard rate
Thus: 11 500 units x 3 hours/unit x R15 per hour = R517 500

QUESTION 3 (20 Marks)

(a) Method of cost determination:

Absorption costing

(b) Budgeted number of units manufactured for the year 2011:

Production cost	= (units) (variable cost per unit)+ fixed costs	
R721 000	= (x) (11)+ 325 000	
11x	= R721 000 – R325 000	
x	= 36 000	

(c) Budgeted units on hand at 31 August 2011:

Opening	8 000
Manufactured	36 000
Sales	(42 000)
Closing	2 000

(d) Budgeted income statement for 31 August 2011 for Poenie Limited

	R
Income (given)	1 050 000
Less: Variable production cost	(455 600)
Opening stock (8 000 x R10,20)	81 600
Variable production cost (36 000 x R11)	396 000
Less: Closing stock ((396 000/36 000) x 2 000)	(22 000)
	594 400
Less: Variable selling and administration cost (R1,40 x 42 000)	(58 800)
Marginal income	535 600
Less: Fixed cost	(483 000)
Production	325 000
Selling and administration cost	158 000
Net Profit before tax	52 600

(e) Reconcile the difference in net profit between the income statement given, and the income statement in (d).

	R
Net profit: Absorption costing	29 282
Net profit: Direct costing	52 600
	23 318
Reflected by	
Opening stock	39 600
Absorption	121 200
Direct	81 600
Closing stock	16 282
Absorption	38 282
Direct	22 000
	23 318

QUESTION 4

PART A (15 Marks)

NEW INVENTIONS LIMITED

(a) Calculation of the total costs to date:

	R
Material	8 188 000
Issued	9 400 000
Proceeds from sale of materials (cost price R320 000)	(352 000)
On hand at 28 February 2010	(860 000)
Machinery	1 500 000
Transferred to the site	4 600 000
Sold at selling price	(800 000)
Value of machinery on 28 February 2010	(2 300 000)
Direct Labour	3 300 000
Overheads	700 000
TOTAL COSTS TO DATE	13 688 000

(b) Calculation of the total estimated profit on the contract:

	R
Original contract price	25 000 000
Extras	1 500 000
	26 500 000
Less: Total estimated costs to complete the contract	(23 000 000)
TOTAL ESTIMATED PROFIT	3 500 000

(c) Calculation of the profit for the year using the ratio of costs to date to the total estimated costs

$$\frac{\text{Cost to date}}{\text{Estimated total costs}} \times \frac{\text{Total estimated profit}}{1}$$

= R13 688 000/R23 000 000 x R3 500 000

= R2 082 957

PART B (15 Marks)

(a) Calculation of the marginal income per picture frame.

	R
Selling price per picture frame	50
Variable production cost	(35)
Direct material	15
Direct labour	12
Overheads	8
Marginal income per picture frame	15

(b) Calculation of the fixed cost for the year.

Break-even Quantity	20 000 units
Marginal income	R15
Fixed cost	R300 000[1]

[1] 20 000 x R15

(c) Calculation of the break-even-value.

Break-even Quantity	20 000
Selling price per picture frame	R50
Break-even-value	R1000 000[2]

[2] 20 000 x R50

(d) How many units would have to be sold, if the selling price remains the same.

Sales = Fixed cost + Variable cost + Pre-tax profit
50x = R300 000 + 35x + (1 080 000/0,72)
50x = R300 000 + 35x + 1 500 000
50x-35x = R1 800 000
15x = R1 800 000
x = 120 000 units

(e) If the units sold in (d) were achieved, how many units have to be manufactured.

Manufactured	117 000
Opening stock	(5 000)
Sales	120 000
Closing stock	2 000

(f) Calculate the margin of safety ratio if the expected sales in (d) is the same.

Expected sales			120 000
Break-even Quantity			20 000
			100 000
Expected sales			120 000
Ratio	100 000/120 000	=	83,33%

PART C (10 Marks)

(a) Calculation of Activity rates:

Activity	Activity costs R	Cost driver volumes	Activity rates R
Assembly	750 000	10 set-ups	750 000 / 10 = R75 000 per set-up
Compressing	840 000	8 set-ups	840 000 / 8 = R105 000 per set-up
Inspection	12 000	5 inspections	12 000 / 5 = R2 400 per inspection

(b) Calculate the overhead costs per unit manufactured for each of the products:

Activity	Pink R	Blue R	Yellow R
Assembly	3 set-ups x R75 000 per setup = R225 000	5 set-ups x R75 000 per setup = R375 000	2 set-ups x R75 000 per setup = R150 000
Compressing	3 set-ups x R105 000 per setup = R315 000	4 set-ups x R105 000 per setup = R420 000	1 set-up x R105 000 per setup = R105 000
Inspection	2 inspections x R2 400 per inspection = R4 800	2 inspections x R2 400 per inspection = R4 800	1 inspection x R2 400 per inspection = R2 400
TOTAL	R544 800	R799 800	R257 400
Number of units manufactured	8 000	5 000	3 000
Overhead costs per unit	R68,10	R159,96	R85,80

Extra questions

QUESTION 1 (20 marks) (24 minutes)

The following information was extracted from the accounting records of Bafana Limited for the year ended 31 December 2009 and their 2010 budget

	Actual 2009	Budget 2010
	Units	Units
Completed units at the beginning of the year	Nil	5 000
Production for the year	30 000	32 000
Sales for the year	25 000	35 000
	R	R
Fixed costs		
Production	150 000	175 000
Selling and administrative	100 000	100 000
Variable cost per unit		
Production	10,00	12,00
Selling and administrative	5,00	5,00
Selling price per unit	30,00	30,00

The company uses the weighted average method for the valuation of stock

REQUIRED:

(a) Prepare budgeted income statements for the financial year ended 31 December 2010 according to

(i) the absorption costing method
(ii) the directed costing method

The format of the two income statements must clearly illustrate the difference between the two methods approached (17)

(b) Reconcile the difference in net income according to the two methods (3)

[TURN OVER]

QUESTION 3 (20 marks) (24 minutes)

Worldcup CC manufactures a single product in a single process Material is added at the beginning of the process and conversion costs are incurred uniformly during the process

Cost and production information for February 2010 is as follows

	Rand	Units
Work in process - 1 February - 40% completed	114 000	3 000
Material cost	66 000	
Conversion cost	48 000	
Material added in February	569 856	24 000
Conversion cost in February	330 480	
Completed and transferred to finished products		16 950
Work in process – 28 February - 75% completed		4 500

Additional information

1 The first-in first-out (FIFO) method is used for stock valuation
2 Normal spoilage is 20% of input
3 Spoilage occurs when the process is 40% complete

REQUIRED

(a) Prepare the following statements for February 2010

(i) Production statement (6)
(ii) Production cost statement (3)
(iii) Allocation statement (6)

(b) Prepare the production statement if normal spoilage occurs when the process is 80% complete (5)

QUESTION 4 (25 Marks)(30 Minutes)

Samba Boys manufactures gym equipment The process involve three manufacturing cost centres, Aye (**A**), Bee (**B**) and Cee (**C**), and two services cost centres, Why (**W**) and Zet (**Z**)

The budget overhead expenditure for the year 31 March 2010 is as follows

	R
Canteen	36 000
Depreciation	54 000
Electricity	16 200
Indirect labour production costs	90 000
Rent, rates and insurance	23 000
Repairs and maintenance	10 800
	230 000

The company uses the following basis to allocate their overheads among the various cost centres

	A	B	C	W	Z
Machinery at cost	R150 000	R100 000	R20 500	R2 000	R 500
Repairs and maintenance-Direct	R3 600	R3 600	R1 800	R 900	R 900
Floor area - m^2	400	300	300	100	50
Number of employees	12	10	8	1	1

Other information:

	A	B	C	W	Z
Budgeted direct labour hours	5 000	5 000	2 500	-	-
Budgeted machine hours	10 000	5 000	2 000	-	-
Actual direct labour hours	6 250	6 500	2 375	-	-
Actual machine hours	17 500	4 500	2 200	-	-

Additional information:

1 Service cost centres costs are allocated to manufacturing and service cost centres on the following bases and sequence
First Zet(**Z**) - 4 3 2 1
Second Why(**W**) - number of employees
2 Overhead allocation rates are based on labour hours

REQUIRED:

(a) Calculate the primary and secondary allocation of overheads to each department (round calculations to the nearest rand) (18)
(b) Calculate the overhead allocation rate for **A**, **B** and **C**. (4)
(c) Calculate the applied overhead for **A**, **B** and **C** (3)

[TURN OVER]

Suggested solution:
(a) (i) **Absorption costing method**

Sales (35 000 x R30)	**1050 000**
Less: Cost of Sales	**(599 730)**
Opening stock	75 000[1]
Variable production cost (32 000 x R12)	384 000
Fixed production costs	175 000
	634 000
Less: Closing stock	(34 270[2])
Gross profit	**450 270**
Less: Selling and administrative costs	**(275 000)**
Variable (35 000 x 5)	175 000
Fixed	100 000
NET PROFIT	175 270

[1]Production cost 2009:

Variable (30 000 x R10)	300 000
Fixed	150 000
	450 000

Opening stock 2010: 450 000 x 5 000/30 000 = 75 000 (We're applying the WEIGHTED AVERAGE METHOD of stock valuation and therefore we are taking the production cost (variable AND fixed) for 2009 and then apply it to the opening stock.
(30 000 units were produced in 2009 of which 5 000 was left – therefore 5 000/35 000 x production cost for 2009)

[2]Calculation of the closing stock: 2 000/37 000 x 634 000 = 34 270

Reminder:

The period cost in an absorption costing income statement is as follows:
*The selling and administrative costs (variable and fixed)

The period cost in a direct costing income statement is as follows:
*All fixed costs, as well as the variable selling- and administrative cost

Suggested solution:

a) i) Production statement/Quantity statement

It is important to note that for the "completed from opening stock" output units – you have to look at the "work-in-process 1 Feb 2010 (opening)" input units. Then you have to determine whether the units have passed the wastage point already or whether it still has to pass the wastage point.

The wastage point does not determine how many units go to waste, but WHERE in the process the wastage occurs.

You have to read further in the question. In point 2 & 3 under the additional information the information needed is given as follows:
2. Normal spoilage is 20% of output.
3. Spoilage occurs when the process is 40% complete (THIS IS WHERE THE WASTAGE WILL TAKE PLACE).

"If the closing w-i-p has reached/passed the wastage point ALREADY = DO NOT INCLUDE figures under equivalent units in the quantity statement"
In this question – the work in process (closing) is 75% completed and has therefore passed the wastage point of 40% ALREADY – therefore you should not have had any equivalent figures in your quantity statement for raw materials/ conversion cost.

See below:

Wastage point: 40%

			Equivalent units			
Input		**Output**	**Raw materials**		**Conversion costs**	
(units)	**Details**	**(units)**	**Units**	**%**	**Units**	**%**
3 000	Work-in-process - 1 Feb. 2010					
24 000	Put into production					
	Completed from:					
	- Opening stock①	3 000	-	-	1 800	60
	- Current production	13 950	13 950	100	13 950	100
	Completed and transferred	16 950	13 950		15 750	
	Normal loss③	4 800	-	-	-	-
	Abnormal loss②	750	750	100	300	40
	Work-in-process - 28 Feb. 2010	4 500	4 500	100	3 375	75
27 000		27 000	19 200		19 425	

Wastage point 40%:

① The opening stock passed through the point of spoilage during the previous month (it's already at 40% in the process).
Therefore no units will go to waste *in the current process/period* and the input = output = 3 000 units.

② Balancing figure

③ 24 000 x 20% = 4 800 (can you see that we do not take into account the opening work-in-

process units here, because they already went to waste in the previous process)

ii) Production cost statement for February 2010

	Total	Material	Conversion Costs
	R	R	R
Work -in -process 1 Feb. 2010	114 000	-	-
Current costs	90 336	569 856	330 480
	1 014 336	569 856	330 480
Current costs			
Equivalent units		569 856	330 480
		19 200	19 425
Cost per equivalent unit			
	R46,69	R29,68	R17,01

iii) Cost allocation statements

Work-in-process	**1 Feb 2010**	**114 0000**
Material		**66 000**
Conversion cost		**48 000**
Current production		**681 944**
Material	**13 950 x R29,68**	**414 036**
Conversion cost	**15 750 x R17,01**	**267 908**
Abnormal spoilage		**27 363**
Material	**750 x R29,68**	**22 260**
Conversion cost	**300 x R17,01**	**5 103**
Work-in-process: 28 Feb 2010		**190 969**
Material	**4 500 x R29,68**	**133 560**
Conversion cost	**3 375 x R17,01**	**57 409**
		1 014 276
Rounding off difference		**60**
		1 014 336

Overhead	Basis	Production			Service		Total
		A	B	C	W	Z	
		R	R	R	R	R	R
Canteen	No. of employess	13500	11 250	9 000	1 125	1 125	36 000
Depreciation	Machinery at cost	29 670	19 780	4 055	396	99	54 000
Electricity	Floor area	5 635	4 226	4 226	1 409	704	16 200
Indirect labour	Labour hours	36 000	36 000	18 000	0	0	90 000
Rent,rates&Ins	Floor area	8 000	6 000	6 000	2 000	1 000	23 000
Repairs&maint	Direct allocation	3 600	3 600	1 800	900	900	10 800
Primary allocation		96 405	80 856	43 081	5 830	3 828	230 000
Allocation of Zet		1 531	1 148	766	383	(3828)	
		97 936	82 004	43 847	6 213	0	
Allocation of Why		2 485	2 071	1 657	(6213)		
Secondary allocation		100 421	84 075	45 504	0		

If we take the overhead: Canteen cost for example, you have to determine what the best basis is to use to allocate the overheads. This would be the number of employees.
The total number of employees = 12 + 10+ 8 + 1 + 1 = 32.

Now for allocating this cost to Production cost Centre A: 12 (employees for A)/32 (total employees) x 36 000 (total canteen costs) = 13 500.
Production cost Centre B: 10 (employees for B)/32 (total employees) x 36 000 (total canteen costs) = 11 250.
Production cost Centre C: 8 (employees for C)/32 (total employees) x 36 000 (total canteen costs) = 9 000.
Service cost Centre W: 1 (employee for W)/32 (total employees) x 36 000 (total canteen costs) = 1 125.
Service cost Centre Z: 1 (employee for Z)/32 (total employees) x 36 000 (total canteen costs) = 1 125.

Just look again at this model answer to make sure that you best match the specific overhead with the basis.
(Floorarea would not be the best match for the canteen, because although a certain cost centre may have a very big floor area, it is not necessarily the cost centre with the most employees who will make use of the canteen).
(Employees would not be the best match for the indirect labour, rather the labour hours.)

With the secondary allocation, you are trying to get rid of all the service departments. If a question specifies in which order to allocate the service departments, you have to do it in the given order. If no order is given, you can start with any service department. In this question, they **have** specified which service department to allocate first.

They have indicated in the additional info that Zet needs to be allocated first, and on the basis 4 3 2 1.

The 4 3 2 1 is a ratio and this will mean that the following is applicable:

4 + 3 + 2 + 1 = 10

Therefore 4/10 x 3 828 needs to be allocated to A = 1 531
3/10 x 3 828 to B = 1 148
2/10 x 3 828 to C = 766
And 1/10 x 3 828 to W = 383

A department cannot be allocated to itself, so this means we will not allocate anything to Zet. Zet now has a balance of R0 and we are now finished with this column.

We want to get rid of all the service departments and the additional info shows that Why (W) needs to be allocated secondly. The basis is given as number of employees. A department cannot be allocated to itself, so this means we will not allocate anything to Why. We have got rid of Zet and therefore will also not allocate anything to Zet. Only A,B and C are remaining and we will therefore only use their numbers of employees.

A: 12
B: 10
C: 8
Total = 12 + 10 + 8 = 30

Therefore 12/30 x 6 213 needs to be allocated to A = 2 485
10/30 x 6 213 to B = 2 071
8/30 x 6 213 to C = 1 657

Take note that we take the 6 213, which is the total of Why's primary allocation + the amount allocated to Why from Zet in the secondary allocation.

(b) Calculation of overhead allocation rates:

		A	B	C
		R	R	R
Budgeted overheads	√	100 421	84 075	45 504
Budgeted Labour hours		5 000	5 000	2 500
		20,08√	16,82√	18,20√

(c) Applied overhead

	A	B	C
	R	R	R
Actual hours x overhead rate	6 250 x 20,08	6 500 x 16,82	2 375 X 18,20
	125 500√	109 330√	43 225√