AFRICA UNIVERSITY

(A United Methodist-Related Institution)

"Investing in Africa's Future"

FACULTY OF MANAGEMENT AND ADMINISTRATION

COURSE TITLE: MAC 301 Management Accounting (Parallel)

SEMESTER 1: Final Examination November 2013

LECTURER: Mr S.N. Chuchu

TIME: 3 HOURS

INSTRUCTIONS

Answer **all five (5)** questions.

Start **each** question on a new page in your answer booklet.

The marks allocated to **each** question are shown at the end of the question.

Show all your workings.

Credit will be given for logical, systematic and neat presentations.

Question 1

(a) Virgo Limited manufactures two products, A and B. The selling price and variable cost per unit for the products and total fixed costs per period are as follows:

	Product A	**Product B**	**Total**
	$	**$**	**$**
Selling price per unit	7.00	15.00	
Variable cost per unit	2.94	4.50	
Total fixed cost per period			36 000

The marketing department has estimated that for every five (5) units of Product A sold, one (1) unit of Product B will be sold.

Required:
Determine the break-even point in dollars. Use the contribution margin ratio formula.

[10 marks]

(b) Pisces Limited has been operating in Harare since its incorporation ten years ago. The company is now considering expanding its operations to Bulawayo, or Gweru or Mutare. The firm can at this time only expand to one city.

If the firm expands to Bulawayo, there is a probability of 0.3 that its contribution margin will increase by $400 000, or 0.7 that it will increase by $1 600 000.

If the firm expands to Gweru, there is a probability of 0.4 that its contribution margin will increase by $200 000, or 0.6 that it will increase by $2 000 000.

If the firm expands to Mutare, there is a probability of 0.6 that its contribution margin will decrease by $2 000 000, or 0.4 that it will increase by $5 000 000.

Required:
Use expected values to determine whether the company should expand and, if so, where.

[10 marks]

Question 2

Capricorn Limited manufactures two products, M and N. The products utilize two raw materials, C and D. The following information relates to the two products:

	Product M	**Product N**
	$	**$**
Selling price per unit	48.00	56.00
Variable costs per unit	20.00	32.00
Material C	8.00	12.00
Material D	4.00	8.00

Other variable costs	8.00	12.00
Demand for product per month (units)	20 000	12 000

Additional information:

1. Raw materials available per month are:

	kg
Material C	60 000
Material D	18 000

2. Total fixed cost per month is $50 000.
3. Production time: Assume unlimited machine and labour hours.
4. No inventories of raw materials or finished goods are carried forward from one month to the next.

Required:
Formulate a linear programming model and solve it graphically to determine the optimal production plan. **[20 marks]**

Question 3

(a) Energy Limited specializes in the manufacture of generators. It is planning to introduce a new generator specially designed for domestic use. Development of the new generator is to begin shortly and the company is in the process of determining the price of the generator. The company expects the new generator to incur the following costs:

	Year 1	**Year 2**	**Year 3**	**Year 4**
Units manufactured and sold	2 000	15 000	20 000	5 000
	$	**$**	**$**	**$**
Research and development costs	950 000	50 000	-------	-------
Marketing costs	50 000	37 500	25 000	5 000
Production cost per unit	250	225	200	225
Customer service costs per unit	25	20	20	20
Disposal of specialist equipment				150 000

The marketing manager believes that customers will be prepared to pay $250 for the generator. However, the financial manager believes this will not cover all of the costs throughout the life cycle.

Required:
Calculate the cost per generator looking at the whole life cycle and comment on the price suggested by the marketing manager. **[8 marks]**

(b) Gemini Limited manufactures a single product in a continuous process. The standard quantities and costs and actual quantities for October 2013 were as follows:

Standard quantities and costs

	Quantity kg	Price per kg $	Value $
Material G	40 000	2.50	100 000
Material H	20 000	4.00	80 000
	60 000		180 000

Normal losses occur at an even rate during the processing operation and are expected to be 10% of material input.

Actual quantities

	Quantity kg	Price per kg $	Standard cost of actual usage $
Material G	34 000	2.50	85 000
Material H	22 000	4.00	88 000
	56 000		173 000

Actual output during October 2013 was 53 000 kg.

Required:
Calculate the material usage, mix and yield variances. **[12 marks]**

Question 4

(a) Libra Limited is considering three mutually exclusive products, R, S and T. The firm can only introduce one product and reject the other two. The level of demand for each product might be low, medium or high. The pay-off matrix showing the profits/(losses) associated with each decision is presented below:

Level of demand	Decision (Action to introduce)		
	Product R	Product S	Product T
	$	$	$
Low	20 000	80 000	10 000
Medium	40 000	70 000	100 000
High	50 000	(10 000)	40 000

Required:
Use the minimax regret criterion to determine the product that will be preferred.
[10 marks]

(b) Leo Limited produces three products, A, B and C. The accountant prepared the following budgeted statement of profit or loss for the year ending 31 December 2014:

Budgeted statement of profit or loss for the year ending 31 December 2014

	Product A	**Product B**	**Product C**	**Total**
	$	**$**	**$**	**$**
Sales	10 000	16 000	3 000	29 000
Variable costs	(5 000)	(9 600)	(2 800)	(17 400)
Contribution margin	5 000	6 400	200	11 600
Direct fixed costs				
Advertising	(200)	(200)	(200)	(600)
Salaries	(740)	(800)	(700)	(2 240)
Depreciation	(1 060)	(800)	(200)	(2 060)
Segment margin	3 000	4 600	(900)	6 700
Common fixed costs				(2 500)
Operating profit				4 200

The projected performance of Product C shows a negative segment margin. This would represent the third consecutive year of poor performance for that product line. The Managing Director is concerned about this poor performance and is considering whether to keep or drop Product C.

Salaries are the product line supervisors' remuneration. If Product C is dropped, the line's supervisor would be dismissed. The line's advertising cost would also be eliminated. Many customers buy Product C at the same time they purchase either Product A or Product B. Some will go elsewhere if they cannot buy both products at the same location. If Product C is dropped, the sales of Product A will decline by 15% and the sales of Product B will decline by 20%.

Required:
Determine whether Product C should be dropped. Apply relevant costing. **[10 marks]**

Question 5

Sagittarius Limited manufactures two products, X and Y. The selling prices and production costs per unit are as follows:

	Product X	**Product Y**
	$	**$**
Selling price per unit	42	33
Direct material per unit	3	9
Direct labour per unit ($9 per hour)	18	9
Variable overhead per unit	3	3

Additional information:

1. During January 2014, the available direct labour will be limited to 8 000 hours.
2. The sales demand in January 2014 is expected to be as follows:

	Units
Product X	3 000
Product Y	5 000

3. Operating costs for January 2014 are expected to be as follows:

	$
Direct labour	24 000
Variable overhead	6 500
Fixed cost	20 000
Total operating costs	50 500

Required:

Determine the optimum production plan and calculate the profit that would arise from the plan applying:

(a) the throughput accounting approach **[10 marks]**

(b) the contribution margin approach **[10 marks]**