UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF AGRICULTURAL ECONOMICS
EXAMINATION: JUNE 2013
SUBJECT, COURSE & CODE: INTRODUCTION TO AGRICULTURAL ECONOMICS (AGEC210)

DURATION: 3 HOURS **TOTAL MARKS: 100**

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NOTE: THIS PAPER CONSISTS OF 10 PAGES. PLEASE SEE THAT YOU HAVE THEM ALL.

ANSWER SECTIONS A AND B IN SEPARATE BOOKS

SECTION A: MICRO-ECONOMIC THEORY

Answer **ALL** questions from this section.

QUESTION 1

Indicate whether the following statements are **TRUE** or **FALSE** and briefly motivate your answer. Each question carries **ONE** mark.

1.1 The statement "Population growth in the Republic of South Africa is 3 percent per annum" is normative.

1.2 When marginal cost is greater than average variable cost, average variable cost is increasing.

1.3 An increase in the price of a commodity shifts its supply curve to the right.

1.4 The value of the marginal product curve for an agricultural input is the demand curve for the input.

1.5 Consumers respond to nominal price changes.

1.6 Firms face opportunity costs when the products they produce have complementary and supplementary relationships.

1.7 Giffen goods respect the law of demand.

1.8 Unemployment is a microeconomic problem.

1.9 Fixed costs influence decision-making in the short-run.

1.10 Fixed inputs do not affect the demand for a variable input like fertilizer.

1.11 If the price of input X_1 is zero, the optimum level of use of this input occurs at a point where total product is at its maximum.

1.12 The burden of a tax falls heavily on consumers when taxes are levied on consumers.

1.13 Salt is expected to have greater price elastic demand than beef.

1.14 It is relatively more difficult to substitute inputs on a non-linear iso-quant than it is on a linear one.

1.15 For perfect complements, the economics of input substitution is irrelevant.

[15]

QUESTION 2

Choose the best answer and write the letter (s) of your choice in the answer book. Each question carries **ONE** mark.

2.1 If the quantity demanded for good "B" increases as the price of good "A" increases, one can deduce that A and B are

a. complementary goods
b. normal goods
c. luxury goods
d. substitute goods
e. inferior goods
f. necessity goods

2.2 Suppose the supply of cotton increases in South Africa due to an improved variety. As a result,

a. prices of cotton will decline, *ceteris paribus*
b. quantity demanded for cotton will increase, *ceteris paribus*
c. the prices of the inputs used in the production of cotton will rise, *ceteris paribus*
d. all of the above
e. none of the above

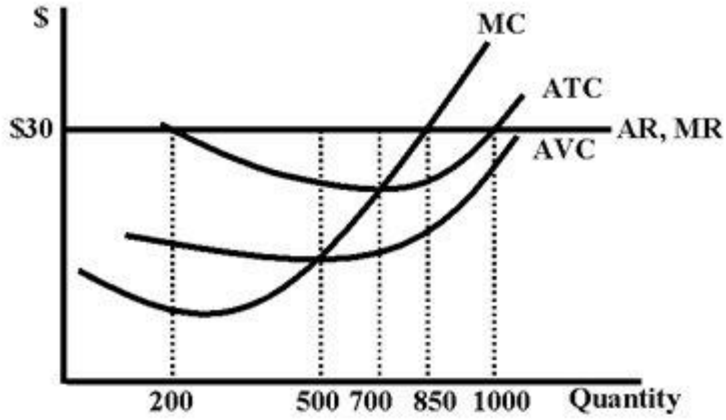
2.3 A commodity will tend to have a price elastic demand if:

a. it has many close substitutes
b. the market is defined more narrowly
c. it is a luxury good
d. the time horizon is long
e. all of the above
f. none of the above

2.4 As marginal rate of product transformation is for product-product relationships, _____________ is for input-input relationships.

a. iso-cost curve
b. iso-revenue curve
c. inverse price ratio
d. production possibility frontier
e. marginal rate of input substitution
f. economies of scale

2.5 Referring to the graph below that depicts cost functions for a firm operating in a perfectly competitive market, profit is maximized when quantity is:



a. 200   b. 700   c. 850   d. 1000   e. none of the above

2.6 For the firm in “2.5” above, the short-run supply curve is

a. portion of the MC curve on condition that output price is greater than AVC
b. portion of the MC curve on condition that output price is greater than ATC
c. portion of the MC curve on condition that output price is greater than MR
d. portion of the MC on condition that MC equals MR
e. all of the above
f. none of the above

2.7 Suppose the price elasticity of demand for sugar is - 0.75 and a kilogram of sugar currently costs R25. If the government wants to reduce consumption of sugar by 20 percent, the new sugar price has to be

a. R48   b. R15   c. R26.6   d. R51.6   e. R75   f. None of the above

2.8 When marginal product is negative,

a. total product is constant.
b. total product is negative.
c. total product is decreasing.
d. the producer is in stage III.
e. c and d
f. b and d

2.9 Agricultural inputs with zero marginal rate of input substitution are

a. perfect substitutes
b. imperfect substitutes
c. perfect complements
d. un-related inputs
e. joint inputs
f. none of the above

2.10 Agricultural commodities typically have

a. price inelastic demand.
b. price inelastic supply.
c. concave production possibility frontier.
d. convex iso-quant.
e. all of the above
f. none of the above

2.11 **______________** is the cost of producing an extra unit of output.

a. explicit cost
b. implicit cost
c. marginal cost
d. fixed cost
e. opportunity cost
f. variable cost

2.12 A firm is at an economic optimum when

a. marginal cost equals marginal revenue.
b. marginal input cost equals marginal value product.
c. marginal rate of input substitution equals the inverse input price ratio.
d. marginal rate of product transformation equals the slope of the iso-revenue line.
e. all of the above
f. none of the above

2.13 One of the following is **FALSE**:

a. A normal good for the rich can be a luxury good for the poor.
b. A normal good can be a Giffen good.
c. Necessity goods generally have price inelastic demand.
d. Asset fixity is one of the reasons for inelastic supply of agricultural products, especially in the short-run.
e. Agricultural products often exhibit seasonal price fluctuations.

2.14 In the long-run, if output price is less than average total cost, the firm is advised to

a. stay in business to break-even
b. stay in business to minimize loss
c. shut-down to save the variable cost
d. shut-down to save the fixed cost
e. exit the market
f. none of the above

2.15 Technological improvement in agriculture results in all of the following **EXCEPT**:

a. shifts the production possibility curve outward
b. shifts the iso-quant to the right
c. shifts the production function to the right
d. increases the marginal productivity of inputs
e. all of the above
f. none of the above

[15]

QUESTION 3

The following questions require some calculations. Please show the necessary steps which lead to your final answer.

3.1. Consider the following production possibility frontier for soya and wheat:

Combination	**Soya (tons)**	**Wheat (tons)**
A	150	0
B	140	15
C	128	30
D	113	45
E	97	60
F	80	75
G	62	90
H	42	105
I	15	120
J	10	135

a. If the prices of soya and wheat are R4500/ton and R6000/ton, respectively, what would be the slope of the iso-revenue line? (1)

b. Given the price information in ‘a’ above, what is one ton of soya worth in terms of tons of wheat? (1)

c. Given the price information in ‘a’ above, what is the optimum output combination of soya and wheat? (3)

d. If both the prices of soya and wheat drop to R4000/ton, what would be the new optimum output combination? Why? (2)

e. As we move from output combination A to J, is the opportunity cost of producing more wheat (in terms of soya) increasing, decreasing or constant? Why? (3)

3.2. Assume the following firm operates in a perfectly competitive market (in both the input and product markets). Assume fertilizer is the only variable input. Fertilizer costs R40/unit and output price is R50/unit. Complete the missing cells in the table below. (6)

Fertilizer	**Q**	**TFC**	**TVC**	**TC**	**MC**	**ATC**	**AVC**	**AFC**
25	70	1300						
	100				8			
	150						10	
	220			3500				

Notes: Fertilizer, Q, TFC, TVC, TC, MC, ATC, AVC and AFC refer to quantity of fertilizer (in units), quantity of output (in units), total fixed cost, total variable cost, total cost, marginal cost, average total cost, average variable cost and average fixed cost, respectively.

Answer the following questions based on the Table completed:

a. What is the marginal input cost? (1)

b. Is the firm making a profit or loss? (1)

c. Is the firm operating in the long-run or in the short-run? Why? (2)

3.3. The table below depicts a production function for cotton as a function of agro-chemicals, all other inputs held constant. Assume agro-chemicals cost R1500/unit and cotton sells for R600/unit. Complete the following table. (5)

Agro-chemical (in units)	**Cotton (in units)**	**Total Revenue (R)**	**Total chemical cost (R)**	**Average product**	**Marginal product**	**Marginal value product (R)**	**Marginal chemical cost (R)**
0	0						
10	15						
20	45						
30	80						
40	120						
50	145						
60	160						
70	140						
80	110						
90	70						

Based on the preceding data,

a. What is the profit-maximizing level of agro-chemicals to use? (1)

b. What is the new profit-maximizing level of agro-chemicals if agro-chemical price rises to R2400/unit, *ceteris paribus*? Why? (2)

c. Where does stage II begin and end in this production function? (2)

[30]

SECTION B: FARM ACCOUNTING

Answer **ALL** questions from this section.

QUESTION 4

Briefly explain the importance and purpose of the following in good bookkeeping:
4.1 Year-end adjustments
4.2 Depreciation
4.3 The Journal.

[6]

QUESTION 5

The following figures were taken from the financial books of Lalapanzi Farm as at 28 February 2013:

Capital as at 01.03.2012	R3 160 000
Depreciation	R75 000
Beef cattle purchased	R35 000
Beef cattle sold	R420 000
Auctioneer's commission	R21 000
Beef cattle as at 01.03.2012	R1 200 000
Beef cattle as at 28.02.2013	R1 120 000
Wages	R94 000
Interest paid	R215 000
Diesel, oil & vehicle maintenance	R44 000
Bad debts	R5 000
Farm drawings	R120 000

You are required to:

(a) Journalise the following year-end adjustment: During the 2012/13 financial year, two head of beef cattle to the value of R10 000 were slaughtered for on-farm consumption by the owner's family. (2)

(b) Determine the beef trading profit or loss of Lalapanzi Farm for the 2012/13 financial year. (Prepare and close off the Beef Cattle ledger account.) (4)

(c) Determine the farm profit (loss) of Lalapanzi Farm for the 2012/13 financial year. (Complete and close off the Profit & Loss account.) (5)

(d) Determine the value of owners' equity for Lalapanzi Farm as at 28.02.2013. (Complete and close off the Capital account.) (3)

[14]

QUESTION 6

Indicate whether the following statements are **TRUE** or **FALSE**, **giving reasons** for each of your answers:

6.1 Capital (Equity) is the amount of money a business owner 'owes' the business. (3)

6.2 Certain foodstuffs in South Africa are zero-rated for VAT purposes to help consumers. (2)

6.3 The VAT Control (SARS) Account in the Ledger is treated both as a Debtor and Creditor account. (3)

[8]

QUESTION 7

Mrs O Khanyile received the following **BANK STATEMENT** for April 2013:

DATE	DETAILS/CHEQUE NO.	AMOUNT	DEPOSITS	BALANCE
APRIL 1	Balance b/d			2 300
4	238	1 200		1 100
5			12 400	13 500
6	236	3 100		10 400
7	239	4 600		5 800
12			32 640	38 440
14	Interest		290	38 730
16	241	1 000		37 730
18	242	280		37 450
21	240	12 000		25 450
24			28 440	53 890
28	Service Fee	180		53 710
29	243	1 600		52 110
30	245	16 340		35 770

An **extract** from Mrs Khanyile's **CASH BOOK** (bank columns only) for April 2013 is as follows:

APRIL			APRIL		
1	Balance b/d	11 600	2	Cheque 238	1 200
11	Deposit	32 640	3	Cheque 239	4 600
25	Deposit	28 440	10	Cheque 240	12 000
			12	Cheque 241	1 000
			15	Cheque 242	2 800
			22	Cheque 243	1 600
			22	Cheque 244	1 600
			25	Cheque 245	16 340
			28	Cheque 246	8 180
				Balance c/f	23 360
		72 680			72 680
Balance b/d		23 360			

Assuming that the Bank Statement is correct, you are required to draw up Bank Reconciliation Statements for 1 April and 30 April 2013. [12]