



**Coimisiún na Scrúduithe Stáit**  
**State Examinations Commission**

**Leaving Certificate 2014**

**Marking Scheme**

**Agricultural Economics**

**Higher Level**

### **Note to teachers and students on the use of published marking schemes**

Marking schemes published by the State Examinations Commission are not intended to be standalone documents. They are an essential resource for examiners who receive training in the correct interpretation and application of the scheme. This training involves, among other things, marking samples of student work and discussing the marks awarded, so as to clarify the correct application of the scheme. The work of examiners is subsequently monitored by Advising Examiners to ensure consistent and accurate application of the marking scheme. This process is overseen by the Chief Examiner, usually assisted by a Chief Advising Examiner. The Chief Examiner is the final authority regarding whether or not the marking scheme has been correctly applied to any piece of candidate work.

Marking schemes are working documents. While a draft marking scheme is prepared in advance of the examination, the scheme is not finalised until examiners have applied it to candidates' work and the feedback from all examiners has been collated and considered in light of the full range of responses of candidates, the overall level of difficulty of the examination and the need to maintain consistency in standards from year to year. This published document contains the finalised scheme, as it was applied to all candidates' work.

In the case of marking schemes that include model solutions or answers, it should be noted that these are not intended to be exhaustive. Variations and alternatives may also be acceptable. Examiners must consider all answers on their merits, and will have consulted with their Advising Examiners when in doubt.

### **Future Marking Schemes**

Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in a given year. The Chief Examiner in any given year has the responsibility to determine how best to ensure the fair and accurate assessment of candidates' work and to ensure consistency in the standard of the assessment from year to year. Accordingly, aspects of the structure, detail and application of the marking scheme for a particular examination are subject to change from one year to the next without notice.



**LEAVING CERTIFICATE 2014**

**AGRICULTURAL ECONOMICS**

**HIGHER LEVEL**

**MARKING SCHEME**

**AND**

**EXPECTED RESPONSES**

Marking Scheme and Expected Responses for use with the Marking Scheme

In considering the marking scheme the following points should be noted:

- The Expected Responses presented are not exclusive or definitive. Marks may be awarded for any other correct answers.
- The Expected Responses in many cases contain key phrases which must appear in the candidate's answer in order to merit the assigned marks.
- Further relevant points of information presented by candidates are marked and rewarded on their merits.

The detail required in any answer is determined by the context and the manner in which the question is asked and by the number of marks assigned to the answer in the examination paper. Requirements may therefore vary from year to year.

**Leaving Certificate Examination, 2014**  
**AGRICULTURAL ECONOMICS - Higher Level**

**Outline Marking Scheme**

**PART I (120 Marks)**

20 QUESTIONS – 15 QUESTIONS TO ANSWER.

ALL QUESTIONS CARRY EQUAL MARKS (8 MARKS)

- |            |                     |            |   |
|------------|---------------------|------------|---|
| <b>1.</b>  | 2 @ 4 marks each    | <b>11.</b> | 8 marks (4 m + 4 m)                           |
| <b>2.</b>  | 8 marks (4 m + 4 m) | <b>12.</b> | Expl: 4 marks (2 m + 2 m)<br>Example: 4 marks |
| <b>3.</b>  | 8 marks             | <b>13.</b> | 8 marks (4 m + 4 m)                           |
| <b>4.</b>  | 2 @ 4 marks each    | <b>14.</b> | 2 @ 4 marks each (2 m + 2 m)                  |
| <b>5.</b>  | 2 @ 4 marks each    | <b>15.</b> | 2 @ 4 marks each                              |
| <b>6.</b>  | 8 marks (4 m + 4 m) | <b>16.</b> | 2 @ 4 marks each                              |
| <b>7.</b>  | 8 marks (4 m + 4 m) | <b>17.</b> | 8 marks (4 m + 4 m)                           |
| <b>8.</b>  | 2 @ 4 marks each    | <b>18.</b> | 8 marks (4 m + 4 m)                           |
| <b>9.</b>  | 8 marks             | <b>19.</b> | 2 @ 4 marks each                              |
| <b>10.</b> | 2 @ 4 marks         | <b>20.</b> | 2 @ 4 marks each                              |

## PART II (200 Marks)

4 QUESTIONS TO ANSWER AT 50 MARKS EACH.

1.	(a)	Three variables	3 @ 6 marks (3 m + 3 m)	18
	(b)	(i) 2 diagrams showing impact @ 4 m each	8 m	
		2 explanations @ 4 m each	8 m	
		(ii) 2 diagram showing impact @ 4 m each	8 m	
		2 explanations @ 4 m each	8 m	32
				<b>[50 marks]</b>
2.	(a)	Two explanations:	2 @ 6 m each (3 m + 3 m)	12
	(b)	Three factors	3 @ 6 marks (3 m + 3 m)	18
	(c)	Two advantages:	5 m (2 m + 3 m) + 5 m (2 m + 3 m)	
		Two disadvantages:	5 m (2 m + 3 m) + 5 m (2 m + 3 m)	20
				<b>[50 marks]</b>
3.	(a)	Balance Sheet	12 entries @ 1 m each	
		Net Worth	3 m	15
	(b)	Ratios	2 @ 4 m	
		Interpretations	4 m + 3 m	15
	(c)	Advice to farmer	20 m (5 m + 5 m + 5 m + 5 m)	20
				<b>[50 marks]</b>

<b>4.</b>	<b>(a)</b>	Price Index	10 marks	16	
		Explanation	6 marks		
	<b>(b)</b>	Benefit:	10 marks		10
<b>(c)</b>	Farmer's prices	2 @ 12 m (8 m + 4 m)	24		
<b>[50 marks]</b>					
<b>5.</b>	<b>(a)</b>	Production of graph:	6 m (6 x 1 m)	10	
		Labelling the axes:	2 m (2 x 1 m)		
		Curve: Total Product Curve	2 m		
	<b>(b)</b>	Diminishing returns:			
		Definition:	10 m (5 m + 5 m)		20
		Relevance to graph:	10 m (5 m + 5 m)		
<b>(c)</b>	Answer:	5 marks	20		
	Explanation:	15 marks (5 m + 5 m + 5 m)			
<b>[50 marks]</b>					
<b>6.</b>	<b>(a)</b>	Roles:	2 @ 10 m each (3 m + 7 m)	20	
	<b>(b)</b>	Two advantages:	10 m (7 m + 3 m) + 6 m (4 m + 2 m)	16	
	<b>(c)</b>	Two opportunities:	2 @ 7 m (4 m + 3 m)	14	
<b>[50 marks]</b>					

**Leaving Certificate Examination 2014**  
**AGRICULTURAL ECONOMICS - Higher Level**  
**Expected Responses**

**PART 1 (120 marks)**

Answer **fifteen** questions. All questions carry equal marks.

**1. According to the 2010 Census of Agriculture for Ireland what is the**

- |      |   |        |                          |         |                                     |         |                                     |
|------|---|--------|--------------------------|---------|-------------------------------------|---------|-------------------------------------|
| (i)  | Approximate total number of farms?        | 80,000 | <input type="checkbox"/> | 100,000 | <input type="checkbox"/>            | 140,000 | <input checked="" type="checkbox"/> |
| (ii) | Approximate average farm size (hectares)? | 21     | <input type="checkbox"/> | 33      | <input checked="" type="checkbox"/> | 48      | <input type="checkbox"/>            |

**2. A farm can be described as economically non-viable when:** a farmer does not have either the ability or resources necessary to keep their farm modernised and keep up with changing economic and technical conditions. The farmer is not adopting new technology and husbandry practices quickly enough. The farmer **does not** have the capacity to (a) pay family labour at the average agricultural wage and (b) provide a 5% return on non-land assets. As a result the farmer will eventually be forced to leave the industry.

**3. Assume that nominal barley prices fall by 2% in a given year, while the general price level for the same year falls by 5%. What has happened to real barley prices?**

- |       |                                      |                                     |
|-------|--------------------------------------|-------------------------------------|
| (i)   | Real barley prices have fallen by 7% | <input type="checkbox"/>            |
| (ii)  | Real barley prices have fallen by 3% | <input type="checkbox"/>            |
| (iii) | Real barley prices have risen by 3%  | <input checked="" type="checkbox"/> |

**4. State two marketing deficiencies affecting Irish agriculture at the present time:**

- The structure of farming in the form of a large number of relatively small units.
- The geographical dispersal of farming over a wide area.
- Seasonality of production and year-to-year variance in nature of supply.
- The bulky and perishable nature of agricultural products.
- Part-time farming.
- Dependence on SFP.
- Lingering BSE concerns, 'horse -burgers'.
- Food quality/safety concerns.

**5. Answer the following questions in relation to the National Farm Survey (NFS):**

- |      |                                   |            |
|------|-----------------------------------|------------|
| (i)  | <b>Who carries it out?</b>        | Teagasc    |
| (ii) | <b>How often is it conducted?</b> | Every year |

6. **Explain the term 'Capital Gains Tax':** a capital tax that is levied on property at the time of sale and is based on the difference between the selling price of property and its original purchase price.
7. **In the theory of demand, explain the term 'Normal Good':** Any good for which demand increases when income increases, and falls when income decreases but price remains constant, i.e. with a positive income elasticity of demand. The term does not necessarily refer to the quality of the good.
8. **State two limitations of the milk quota system on the development of the Irish dairy sector:**
- Quotas work to directly limit the total level of output;
  - Quotas can work to limit the ability of farmers to engage in expansion, thus limiting economies of scale;
  - Quotas can act as a barrier to entry, thus preventing competition in the market, which can work to improve efficiency;
  - Quotas can work to limit the amount of international trade.
  - May encourage inefficient farmers to continue producing their quota, instead of exiting the industry.
9. **In 2013 Seamus bought a second-hand tractor for €8,000. The tractor was manufactured and sold in 2007 for €32,000. How does the purchase of the tractor by Seamus in 2013 affect Gross Domestic Product (GDP) figures for that year?**
- The GDP for 2013 decreases by €24,000
  - The GDP for 2013 remains unchanged
  - The GDP for 2013 increases by €8,000
10. **Assume that 4 units of Input X produce 100 units of Output Y and 5 units of Input X produce 120 units of Output Y, all other inputs held constant. Calculate each of the following:**
- Average product of Y from 4 units of Input X:** 25 units of Y
  - Marginal product of Y from the 5th unit of Input X:** 20 units of Y
11. **Explain the term 'Cost-push Inflation' and give one example from Irish agriculture:**
- Explanation:** a consistent rise in the general price level resulting from an increase in the cost of the factors of production.
- Example:** increasing fertilizer costs, increasing energy costs.

**12. Explain the term 'EU Directive' and give one example from Irish agriculture:**

**Explanation:** A directive is a legislative act of the European Union that requires member states to achieve a certain outcome, without specifying the means by which the objective is to be achieved (i.e. it is up to each member state to transpose them into national law).

**Example:** Nitrates directive, habitats directive.

**13. In what way does reduced economic growth affect the opportunity cost of labour in agriculture?**

The decline in economic growth in areas of the economy outside of agriculture (e.g. construction and manufacturing) creates a lack of employment opportunities in those alternative sectors and thus reduces the opportunity cost for labour in the agricultural sector.

**14. Assume that in Ireland average family farm income is 28% lower than average industry earnings. State two reasons why care is needed in interpreting this gap:**

- (i) It does not take account of other sources of income a farmer may have (e.g. pensions, off-farm income).
- (ii) It does not take account of wealth ownership (e.g. land).
- (iii) It does not take account of the relative taxation burden.
- (iv) Family farm income is calculated per farm rather than per individual.

**15. State two principles of a co-operative:**

- (i) Voluntary membership without restriction.
- (ii) Democratic administration. One man one vote.
- (iii) Limited if any dividend on share capital.
- (iv) Surplus should be distributed to members according to proportion of trade with co-op.
- (v) Provision for education of members.
- (vi) Co-operation amongst cooperatives for mutual benefit.

**16. Which of following commodities would you expect to be the most price inelastic and the most price elastic in terms of demand?**

Commodities	Meat	Food	Fillet steak	Beef
(i) Most inelastic	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Most elastic	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**17. Outline what is meant by the term ‘Greening’ under the CAP reforms agreed in 2013:**

Greening payments will account for 30% of the **Single Farm Payment** and will be contingent on farmers meeting certain criteria based on environmental issues (e.g. biodiversity, protection of habitats, sustainable farming).

**18. Explain the term ‘Public Liability Insurance’ with reference to farming:**

Insurance that covers any damage, physical injury or economic loss caused to any member of the public by the farmer or his property, e.g. a road accident caused by the farmer’s cattle.

**19. If the exchange rate of the euro depreciates/decreases relative to other currencies, what would be the most likely effect on the following?**

- |      |   |          |                                     |          |                          |           |                          |
|------|---|----------|-------------------------------------|----------|--------------------------|-----------|--------------------------|
| (i)  | The cost of imports into the euro area: | Increase | <input checked="" type="checkbox"/> | Decrease | <input type="checkbox"/> | No change | <input type="checkbox"/> |
| (ii) | Inflation in the euro area:             | Increase | <input checked="" type="checkbox"/> | Decrease | <input type="checkbox"/> | No change | <input type="checkbox"/> |

**20. State one benefit and one challenge that the signing of a free trade agreement between the EU and USA may have for Irish agri-business:**

**Benefit:**

- (i) Increased trade can lead to greater variety and lower prices for consumers.
- (ii) Increased market should lead to increase in sales/profit for Irish agri-business firms.
- (iii) Increased investment may be encouraged through access to foreign markets and thus potential for increased economic growth and jobs.
- (iv) Competition and potential for economies of scale can lead to greater efficiency amongst Irish producers.

**Challenge:**

- (i) Increased competition can lead to lower prices for Irish farmers for their products.
- (ii) Increased competition can lead consumers purchasing US agri-products, leading to reduction in demand for Irish agri-products.
- (iii) Difficulties in maintaining food and hygiene standards.

## PART 2 (200 marks)

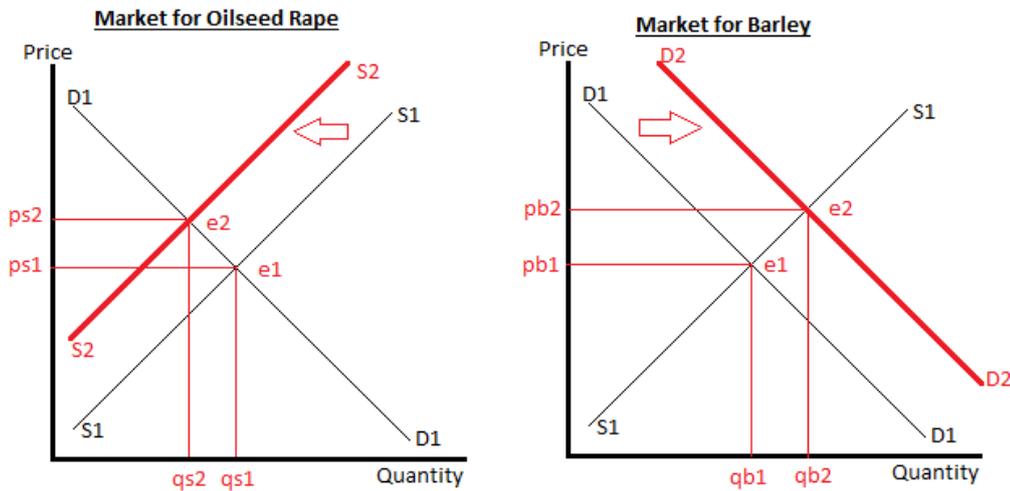
### Question 1

**(a) Outline three variables that influence the supply of agricultural commodities.**

- Price of the commodity – more supplied at higher price.
- Cost of production: Increases in the costs associated with producing commodities (e.g. energy costs, fertilizer) will cause a decrease in supply.
- Environmental variables such as the weather: good growing season will led to increased supply while bad weather may hinder growth and cause reduced supply.
- Technological progress and husbandry improvements: better technology or husbandry methods will increase supply.
- Price of related commodities in production: an increase in the price of a substitute good in production will cause a decrease in the supply of commodity. An increase in the price of a complementary commodity in production (joint products) will cause an increase in supply.
- Taxes and subsidies: increased taxes will reduce supply and increased subsidies will increase supply.
- Expected future prices: where prices are expected to increase in the future, farmers may invest more in the production of that commodity and thereby increase supply.

(b) Copy the given diagrams into your answer book and use them to show the impact on the market price and quantity of oilseed rape and barley for each of the following (i) and (ii) below. Explain your answer in each case.

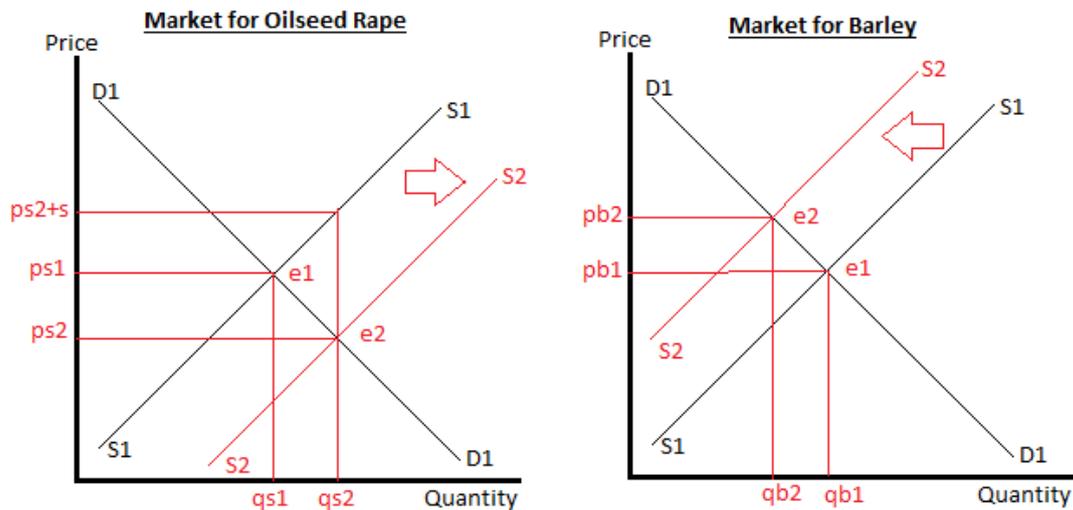
(i) The publication of research findings highlighting the health benefits associated with eating food containing barley.



Greater awareness of the health benefits offered by consuming barley will **increase the demand for barley**, thus shifting its demand curve to the right. This will result in the market **price for barley rising** from pb1 to pb2 and the market **quantity rising** from qb1 to qb2.

The increase in the price barley will provide an incentive for farmers to **substitute** oilseed rape production for barley production, thus causing the **supply of oilseed rape to decrease** (move to left). Thus the **market price for oilseed rape will increase** from ps1 to ps2 and the **market quantity will decrease** from qs1 to qs2.

(ii) **The provision of a subsidy for farmers per hectare of oilseed rape grown.**



The provision of a subsidy should initially result in **increased supply of oilseed rape**, and thereby a **decrease in the market price for oilseed rape** from  $ps_1$  to  $ps_2$  and an **increase in market quantity** from  $qs_1$  to  $qs_2$ .

It is however important to remember that the farmer will earn both the market price and the subsidy (represented by the vertical distance between the supply curves), and will therefore earn  $ps_2+s$  in total.

This increase in earnings ( $ps_1$  to  $ps_2+s$ ) for oilseed rape farmers will provide an incentive for barley farmers to **substitute** barley production for oilseed rape, thus **reducing the supply of barley** (shift supply to left). This will cause the **market quantity of barley to fall** from  $qb_1$  to  $qb_2$  and the **market price to rise** from  $pb_1$  to  $pb_2$ .

## Question 2

(a) **Explain both of the following statements:**

(i) **The total supply of agricultural land is highly inelastic**

Land is a gift from nature formed over millions of years, the total quantity available is therefore **fixed**.

Although it is possible for more agricultural land to become available through means such as drainage, reclamation, deforestation, or transfer from alternative use (e.g. moving from construction/development to agricultural use) this has only a **minor** impact on the total quantity of agricultural land available.

(ii) **The demand for agricultural land is a derived demand.**

Demand for land originates from the contribution it is expected to make to production when combined with other resources (labour, enterprise, capital). It is derived from the demand for the output that land is used to produce.

(b) **Outline three factors that determine the price of land.**

- Price of output and general inflation: higher output prices and/or general inflation will result in increased demand for land and thus increase land prices.
- Expected prices of output: Where prices are expected to rise, farmers will invest in expansion, thus increasing the demand for land and its price.
- Access to Finance. Credit availability and interest rates: low interest rates and easy access to credit provide farmers with the funds to invest in expansion, thereby driving up the demand for land and its price. Lack of credit (during recession) may reduce demand and therefore price.
- Alternative uses for land: the greater the number of alternative uses land can be put to (e.g. agriculture, construction, amenities) increases the demand for the land and thus increases price.
- Location: proximity to urban areas increases the number of potential buyers, the number of alternative uses, and ease of access to the land. Therefore the demand and price should rise.
- Quality of the land / type of output that can be produced: land types differ in terms of the type of produce that can be produced using it. The greater the value of the output per hectare of land will increase the price of that land (e.g. arable land is often more expensive than pasture land).
- CAP support/Tax/subsidy: land that carries with it access to increased tax benefits, subsidy payments (e.g. disadvantaged area) will demand a higher price.

(c) **Discuss two advantages and two disadvantages that a farmer may experience from leasing land instead of purchasing it.**

**Advantages:**

- Reduced financial risk, as there is no need for farmer to undertake debt financing to fund land purchase.
- Enables farmer to explore benefits of expansion/diversification without committing to it.
- Gives the farmer control of the asset (land) without having to incur the costs of ownership (e.g. drainage, maintenance of buildings).
- Tax incentives (e.g. tax relief on rent payments).
- Flexibility – not tied to the farm.

**Disadvantages:**

- Costs of leasing.
- Restrictions on uses farmer can make of the land given the term and conditions of the lease.
- Restrictions on managerial decision making imposed by lease agreement.
- Inability to build equity into the asset.
- Lack the security that comes from land ownership when long term farm planning and investing.

**[50 marks]**

### Question 3

- (a) Construct a balance sheet for this farm showing: fixed assets; current assets; long-term liabilities and current liabilities. Calculate the net worth and input it on the balance sheet.

<b>BALANCE SHEET as at 31/12/2012</b>					
<b>Fixed assets</b>	€	€	<b>Long-term liabilities</b>	€	€
Land and Buildings	250,000		Loans outstanding of buildings	144,000	
Machinery and equipment	25,000		Loans outstanding for machinery	19,000	<b>163,000</b>
Breeding livestock	40,000	<b>315,000</b>			
<b>Current assets</b>			<b>Current liabilities</b>		
Trading Livestock	23,000		Bank overdraft	15,000	
Feed and fertilizers	7,000		Credit card	2,000	<b>17,000</b>
Forage crops	3,000				
Saleable crops	2,000				
Cash and debtors	18,000	<b>53,000</b>	<b>NET WORTH</b>		<b>188,000</b>
		368,000			368,000

OR

<b>BALANCE SHEET as at 31/12/2012</b>			
<b>Fixed Assets</b>	€	€	€
Land and Buildings			250,000
Machinery and Equipment			25,000
Breeding Livestock			40,000
			<b>315,000</b>
<b>Current Assets</b>			
Feed and Fertilizers	7,000		
Cash and Debtors	18,000		
Forage crops	3,000		
Saleable Crops	2,000		
Trading Livestock	23,000	<b>53,000</b>	
<b>Less Current Liabilities</b>			
Bank Overdraft	15,000		
Credit card debt	2,000	<b>17,000</b>	
Working Capital			36,000
<b>TOTAL NET ASSETS</b>			<b>351,000</b>
<b>FINANCED BY</b>			
<b>Long term Liabilities</b>			
Loans for buildings	144,000		
Loans for machinery	19,000	<b>163,000</b>	
<b>NET WORTH</b>		<b>188,000</b>	
			<b>351,000</b>

- (b) **Calculate the liquidity ratio and debt to net worth ratio for the farm (report your answer to two decimal places). Outline what each result tells you about the financial position of the farm.**

**Liquidity ratio:**

Liquid Assets : Current Liabilities;

$$[(2,000+18,000) : (15,000 + 2,000)] = 20,000 : 17,000 = 1.18 : 1$$

The farm has sufficient liquidity, meaning its liquid assets are enough to meet the short-term demands of its creditors. For every €1 owed in the short term, it has €1.18 readily available to repay it.

**Debt to net worth ratio:**

Total liabilities : Net worth

$$[(144,000+19,000+15,000+2,000) : 188,000] = 180,000 : 188,000 = 0.96 : 1$$

The farm is just solvent, meaning that if the farm went out of business today, the sale of all its assets would just be enough to cover its total liabilities. For every €1 the farmer owns, €0.96 of it is borrowed.

- (c) **Assume you are a financial advisor for this farmer. Based on the above data and analysis, what advice would you give the farmer to secure the future financial viability of the business?**
- The farmer should use capital and cash-flow budgeting and/or draw up a business plan to evaluate the feasibility and profitability of any future plans to increase income. The farm can continue to operate in the short run, but may be vulnerable to a decrease in income in the long-run. This is especially true when beef farmers have greater exposure to world prices.
  - The farmer can also consider reducing liabilities through measures such as using contractors and/or sale and leaseback instead of owning machinery themselves (i.e. reduce machinery loans).
  - The farmer should be putting plans in place to ensure enough revenue is generated to meet long-term liability. To ensure this can be done, the farmer should use partial budgets to ascertain if changes in the business are possible to produce increased income, e.g. increasing output through investment.

#### Question 4

The following table shows the quantity and price of meat commodities in 2000 and 2011.

	2000		2011	
	Quantity (heads '000)	Price (€per head)	Quantity (heads '000)	Price (€per head)
<b>Cattle</b>	2,000	670	2,000	938
<b>Pigs</b>	3,000	90	4,000	108
<b>Sheep</b>	4,000	60	2,000	96

- (a) Use the above data to calculate a simple average price index for 2011 for the three meat commodities. Explain your answer.  
(Note: use the base year 2000 = 100 and report your answer to the nearest whole number)

#### Simple price index

Calculate simple index number for each good between 2000 and 2011 using the formula

$$\frac{P_t \times 100}{P_o} = \text{index number.}$$

$$\begin{aligned} \text{Cattle:} & \quad (938 \times 100)/670 = 140 \\ \text{Pigs:} & \quad (108 \times 100)/90 = 120 \\ \text{Sheep:} & \quad (96 \times 100)/60 = 160 \end{aligned}$$

Calculate an average of three indexes:

$$(140 + 120 + 160)/3 = 140$$

The simple average price index shows that **meat prices on average increased by 40% between 2000 and 2011**. However, this figure does not take account of the proportion of meat output values accounted for by the various types of meat.

- (b) Outline the benefit of using a weighted price index instead of a simple average price index.

A price index is calculated by setting the level of prices at a selected base period set equal to 100.

A weighted average price index is **more realistic** than a simple average price index because of how it is calculated. The weighted index attributes a weight to each commodity based on pre-defined criteria, such as its proportion of sales in the base period. This gives the index a more accurate result than the simple index where each commodity is treated equally, regardless of its importance.

(c) **Discuss how a farmer might seek to increase the prices received for his/her agricultural output.**

- Improved product innovation: Gaining access to new markets with higher prices for agricultural output. Can be used to improve customer interest in output and gain access to niche markets, thus enabling a premium price to be gained, e.g. organic farming.
- Production of more value added output: the production of more value added products (e.g. food ingredients, cheese) through the establishment of farmer controlled processing facilities, puts farmers in a better position to absorb more of the product value that normally accrue to outside processors.
- Engaging more in direct sales to consumers through initiatives such as direct sales off the farm, country markets or farmers' markets, localised marketing groups.
- Greater investment in branding, helping to improve customer loyalty and improving the price they are willing to pay for output.
- Initiatives designed to ensure processors pass higher food values back to farmers in a higher output price, by striking better deals with retailers. Examples could include lobbying through farmer representative groups or politicians.
- Investment in technology and research to improve quality and reliability of agricultural output, thus supplying goods that are tailored to the needs of customers and improve their loyalty.

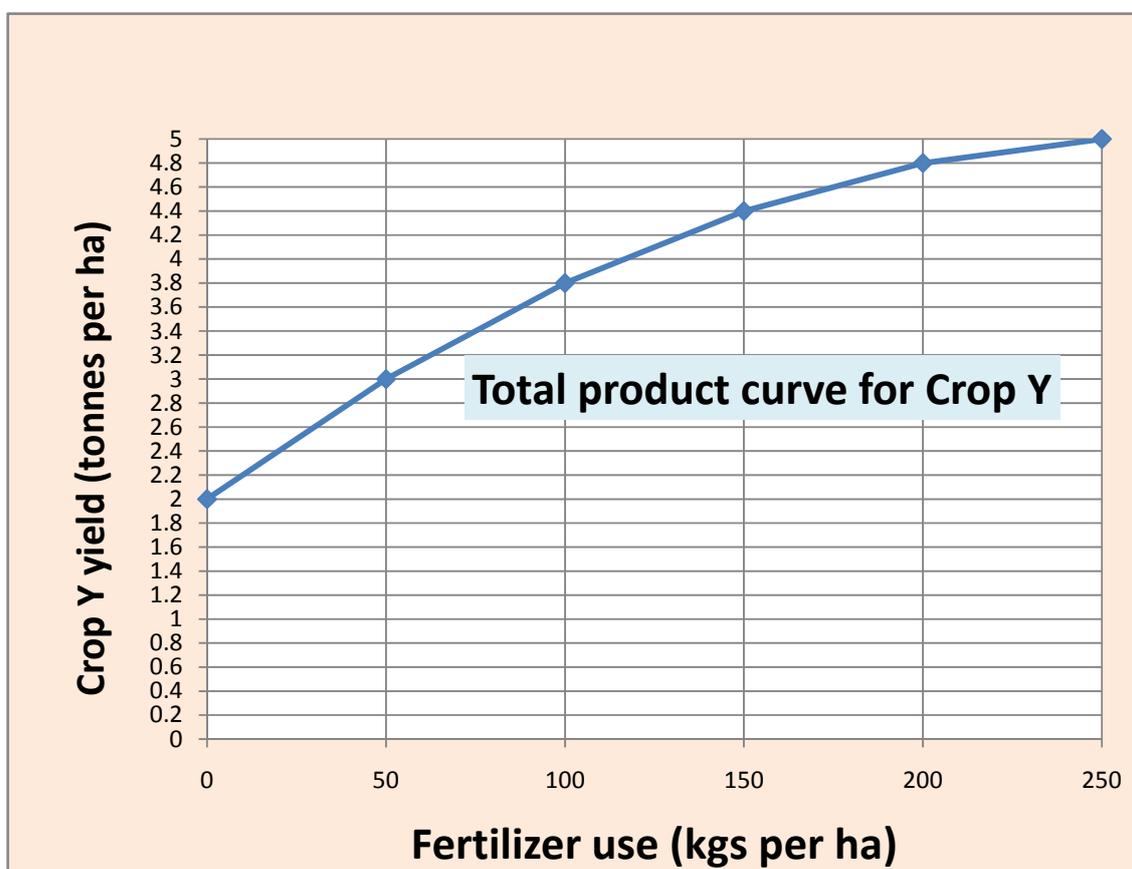
**[50 marks]**

### Question 5

The following table shows the effect of different levels (A to F) of fertiliser use (kgs per hectare) on the yield of Crop Y (tonnes per hectare).

	A	B	C	D	E	F
Fertilizer use (kgs per ha)	0	50	100	150	200	250
Crop Y yield (tonnes per ha)	2.0	3.0	3.8	4.4	4.8	5.0

- (a) Using the data in the above table, construct a graph showing the relationship between fertiliser use (horizontal x-axis) and crop yield (vertical y-axis). Label both axes and the curve identified by the graph.



- (b) **Define the economic law of diminishing marginal returns and explain how it is illustrated by the graph.**

The law of diminishing marginal returns states that as more of a variable factor (e.g. fertilizer) is added to a fixed factor (e.g. land) a point is reached where the increase in output (product) created starts to diminish. Output is increasing but at a decreasing rate for each additional unit of input.

Total product of Y increases with each additional 50 kg of fertilizer applied. However the extra product of Y gained from each additional 50 kg of fertilizer gets progressively smaller.

For example, Y increases by 1 tonne per ha when fertilizer use increases from 0 to 50 kg per ha but Y only increases by 0.2 tonnes per ha when fertilizer use increases from 200 to 250 kg per ha.

- (c) **Farmer John currently operates at point D (i.e. he uses 150 kgs of fertiliser per ha and gets a crop yield of 4.4 tonnes per ha). He is thinking about operating at point E.**

**Does it make economic sense to move from point D to point E, if fertiliser costs €1 per kg and the sales price of the crop is €100 per tonne? Explain your answer.**

It does not make economic sense.

Marginal Cost: The extra fertilizer costs €50 (200 – 150).

Marginal Revenue: The revenue from extra product is €40 [(4.8 – 4.4) x 100] i.e. 0.4 x 100

Revenue at Point E is €10 less than Cost.

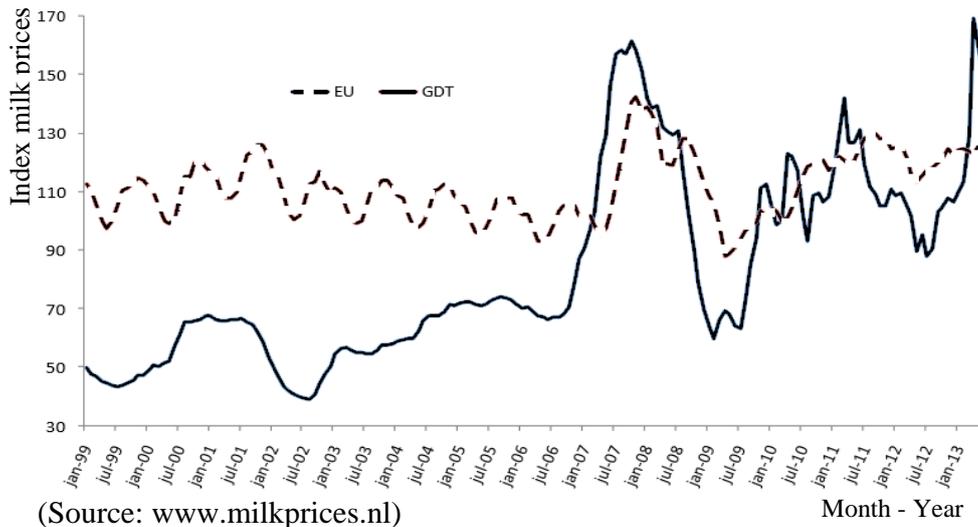
Marginal Revenue is less than Marginal Cost at Point E.

Moving from system D to E would entail an economic loss of €10 per ha.

Irrational to make the change.

## Question 6

Average EU milk prices and Global Dairy Trade (GDT) prices (March 2010 = 100).



- (a) **The graph above shows the convergence of EU milk prices with global prices (GDT) since the mid-2000s. Outline the role of EU policy reforms and global demand for milk products in creating this convergence.**

### EU policy reforms:

Price supports: since 2003 there was a reduction in EU price supports. Since Luxembourg Agreement in 2003, EU has reduced price supports and replaced them with SFP (decoupling), which was first put in place in 2005 and thus brought EU prices more in line with global prices from early 2007.

### Global demand for milk products:

Growing demand for milk-based products, especially in China and other emerging markets, has caused global prices to rise to meet, and even surpass EU prices.

- (b) **State two competitive advantages that Irish dairy farmers have in a global market.**
- Climate and land: Irish land and climate is well suited for grassland and therefore provides relatively cheaper feed for cows than some competitors, who need to rely on supplementary feedstuffs.
  - Strong reputation: Ireland has a very good international brand for high quality milk. Traceability.
  - Well established processing sector: Ireland strong processing sector places it in a strong position to compete in the global market.

**(c) Discuss two opportunities available to the Irish dairy sector to improve its future competitiveness on the global market.**

- (i) Increased production when restrictions placed on Irish dairy farmers by the quota system are removed in 2015.
- (ii) Consolidation of smaller farms to create larger holdings and/or the establishment of partnership structures amongst dairy farmers can create increased economies of scale.
- (iii) Establishment of free trade agreements such as the recent one formed between the EU and Canada can provide improved access to overseas market.
- (iv) Better promotion of Irish brand for quality through programmes such as the quality assurance scheme from Bord Bia can help attract increased demand for Irish dairy produce.
- (v) Adoption of improved methods in breeding, technology, horticulture, etc. facilitated through improved research conducted by agencies such as Teagasc can help improve the productivity and sustainability of Irish dairy farming.

