Diploma Programme
Programme du diplôme
Programa del Diploma

Economics
Higher level
Paper 3

Tuesday 3 May 2016 (afternoon)

Candidate session number

1 hour

Instructions to candidates

- Write your session number in the boxes above.
- You are permitted access to a calculator for this paper.
- Do not open this examination paper until instructed to do so.
- Answer two questions in the boxes provided.
- Unless otherwise stated in the question, all numerical answers must be given exactly or correct to two decimal places.
- You must show all your working.
- The maximum mark for this examination paper is **[50 marks]**.

Answer **two** questions. Each question is worth **[25 marks]**. Write your answers in the boxes provided.

1. In Ruritania, the demand for butter is given by the function

$$Qd = 420 - 19P$$

where Qd is the quantity of butter demanded per year, in millions of kilogrammes (kg), and P is the price of butter in dollars ($) per kg.

(a) Calculate the quantity of butter demanded per year when price per kg is:

(i) $7; [1]

. . . .

. . . .

(ii) $10. [1]

. . . .

. . . .

(b) (i) Calculate the price elasticity of demand when price increases from $7 to $10. [2]

. . . .

. . . .

. . . .

. . . .

(This question continues on the following page)

(Question 1 continued)

(ii) Explain why, for a linear demand curve, the price elasticity of demand is not represented by the slope of the **demand curve**. [4]

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

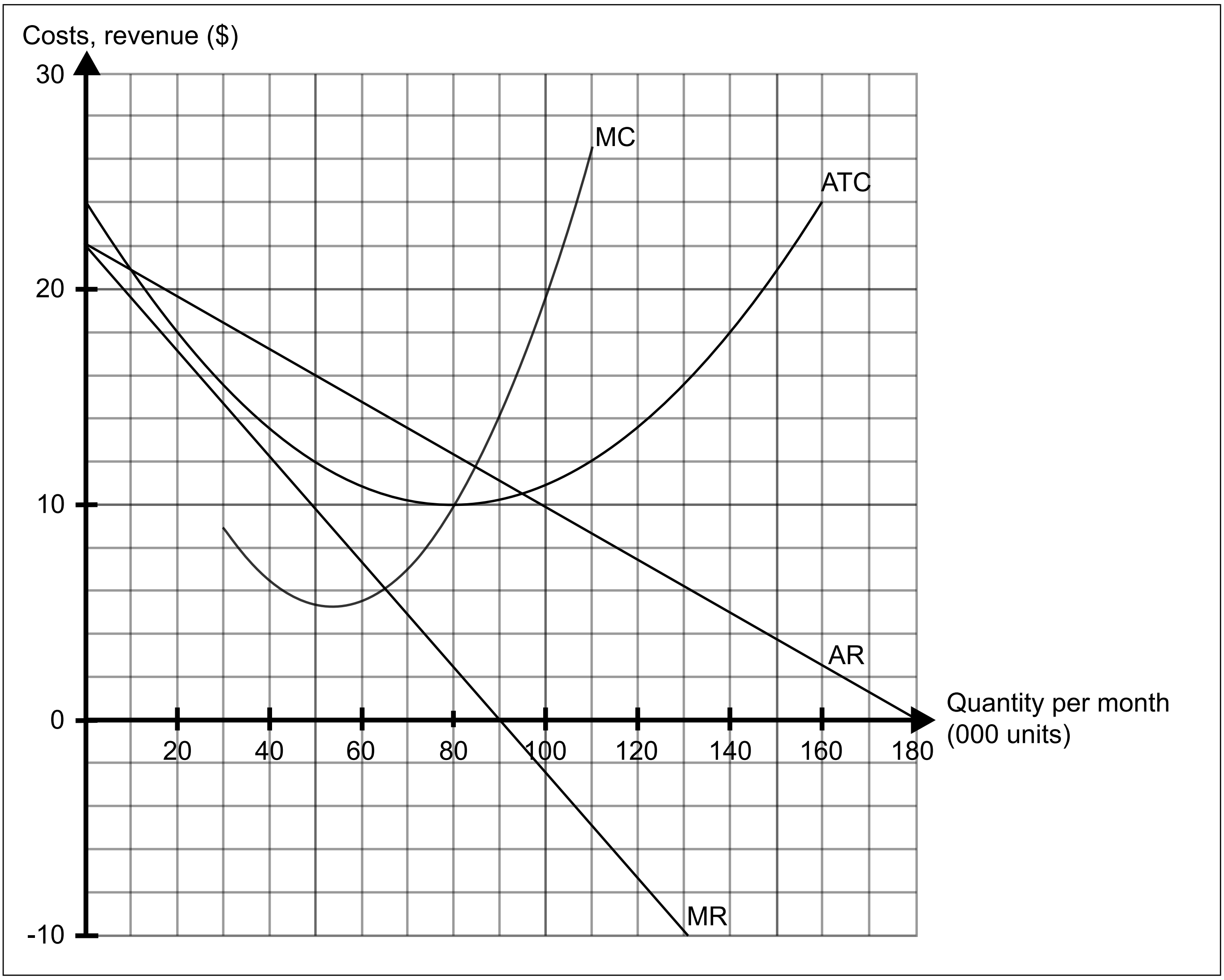
. . . .

. . . .

(This question continues on the following page)

(Question 1 continued)

The following diagram illustrates the average total cost (ATC), marginal cost (MC), average revenue (AR) and marginal revenue (MR) curves for a cartel which acts as a monopoly in order to maximize joint profits.



(c) (i) If fixed costs are $800 000 per month, calculate the total variable costs at a monthly output of 140 000 units. [2]

. . . .

. . . .

. . . .

. . . .

(This question continues on the following page)

(Question 1 continued)

(ii) Outline the difference between the explicit and implicit costs of production. [2]

. . . .
. . . .
. . . .
. . . .

(iii) Define the term *normal profit*. [2]

. . . .
. . . .
. . . .
. . . .

(d) (i) Calculate the economic profit made by the cartel if the members jointly supply 50 000 units per month. [2]

. . . .
. . . .
. . . .
. . . .

(ii) Identify the level of output which would maximize revenue for the cartel. [1]

. . . .
. . . .

(This question continues on the following page)

(Question 1 continued)

(iii) Calculate the value of total revenue per month for members of the cartel if they produce at the revenue maximizing level of output. [2]

. . . .
. . . .
. . . .
. . . .

(e) Outline the reason why, even if a cartel achieves its objective of jointly maximizing profit, there will be an incentive for members of the cartel to cheat. [2]

. . . .
. . . .
. . . .
. . . .

(f) Explain **two** conditions, apart from the incentive for members to cheat, which make cartel structures difficult to maintain. [4]

. . . .
. . . .
. . . .
. . . .
. . . .
. . . .
. . . .
. . . .
. . . .
. . . .

2. The currency of Botswana is the Botswana pula (BWP). The annual demand for the BWP is given by the function

$$Qd = 4611 - 100P$$

while the annual supply is given by the function

$$Qs = 4578 + 200P$$

where P is the United States dollar price of the BWP (US$/BWP), Qd is the annual quantity demanded and Qs is the annual quantity supplied in millions of units of BWP. The value of the BWP is determined in a freely floating exchange rate system.

(a) Define the term *freely floating exchange rate system*. [2]

. . . .

. . . .

. . . .

. . . .

(b) Calculate the equilibrium exchange rate for the Botswana pula (BWP). [2]

. . . .

. . . .

. . . .

. . . .

(This question continues on the following page)

(Question 2 continued)

(c) Following a rise in domestic interest rates in Botswana, the value of the BWP rises to US$0.14.

(i) State the term used to describe the change in Botswana's exchange rate. [1]

. . . .

. . . .

(ii) Outline **one** reason why the increase in domestic interest rates in Botswana may have caused the value of the BWP to increase. [2]

. . . .

. . . .

. . . .

. . . .

(iii) State the term that would describe the change if the BWP was determined in a fixed exchange rate system. [1]

. . . .

. . . .

Diamonds are a major export of Botswana, representing approximately 75 % of export revenues. The demand for diamonds is considered highly income elastic.

(d) (i) Define the term *income elastic*. [2]

. . . .

. . . .

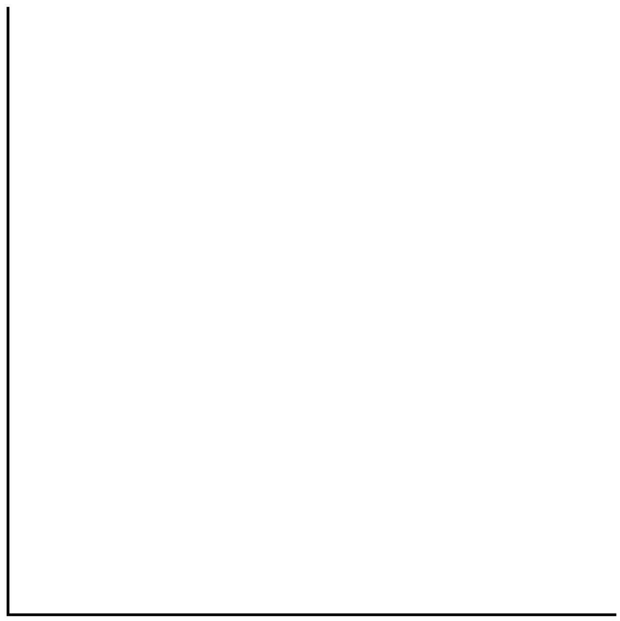
. . . .

. . . .

(This question continues on the following page)

(Question 2 continued)

(ii) Explain, using an appropriate diagram, how faster economic growth in the US and the European Union (EU) may affect the value of the BWP. [4]



(This question continues on the following page)

(Question 2 continued)

The following table shows Botswana's terms of trade between 2007 and 2010 as an index number (base year: 2000).

2007	**2008**	**2009**	**2010**
98.61	80.57	81.27	84.57

[Source: adapted from www.afdb.org (2012) and www.theglobaleconomy.com (2014)]

(e) (i) State the formula used to measure the terms of trade. [1]

. . . .

. . . .

(ii) Outline the meaning of the "terms of trade". [2]

. . . .

. . . .

. . . .

. . . .

(f) (i) Calculate the percentage change in Botswana's terms of trade between 2007 and 2008 **and** between 2008 and 2010. [2]

. . . .

. . . .

. . . .

. . . .

(This question continues on the following page)

(Question 2 continued)

(ii) Using appropriate terms, describe the changes in Botswana's terms of trade between 2007 and 2008 **and** between 2008 and 2010. [2]

(g) Assume now that Botswana's currency depreciates. Explain how this may impact on the country's current account balance. [4]

Please **do not** write on this page.

Answers written on this page
will not be marked.

3. The following information provides a simplified version of the calculation of a consumer price index (CPI).

In Country A, the rate of inflation is measured by the calculation of a CPI. The index is calculated using the five products which are purchased by citizens of Country A as representative of a "typical basket of goods".

The weighting given to each product is based on the quantities of each product purchased by the average household in Country A per week.

Table 1

Product	**Average price per unit in dollars ($)**		**Quantity of each product purchased by the average household per week**
	2015	**2016**	
A	5.60	6.30	25
B	3.45	3.50	18
C	1.20	1.05	40
D	8.40	9.20	5
E	2.55	2.35	12

Assume that 2015 is the base year for the purpose of calculating the CPI.

(a) Calculate the consumer price index (CPI) for Country A in 2016. [3]

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

(b) State **two** reasons why the CPI may not accurately reflect changes in the cost of living for citizens of Country A. [2]

. . . .

. . . .

. . . .

. . . .

(This question continues on the following page)

(Question 3 continued)

In Country B, the values of the CPI between 2008 and 2012 are given in the following table.

Table 2

Year	CPI
2008	98
2009	97
2010	100
2011	110
2012	115

(c) (i) Using the data in **Table 2** to support your answer, identify **one** year in which Country B experienced deflation **and one** year in which Country B experienced disinflation. [2]

. . . .

. . . .

. . . .

. . . .

(ii) In Country B, nominal per capita GDP is $800 per month in 2010 and $940 per month in 2012. Using the CPI in **Table 2** as a deflator, calculate the percentage change in real per capita GDP from 2010 to 2012. [2]

. . . .

. . . .

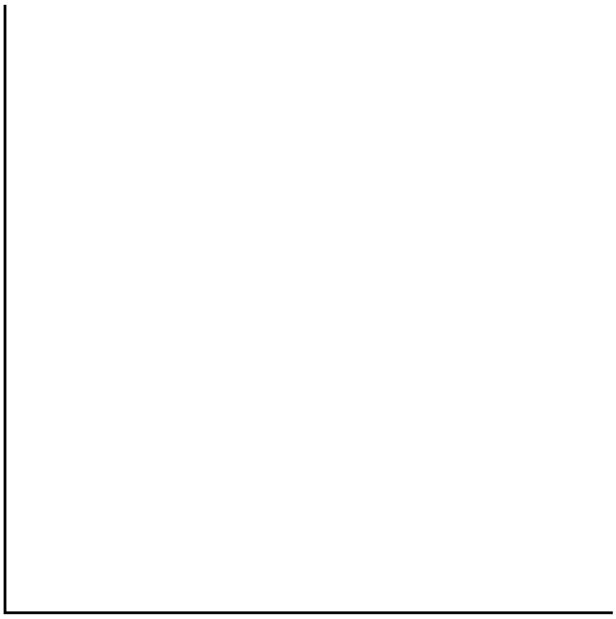
. . . .

. . . .

(This question continues on the following page)

(Question 3 continued)

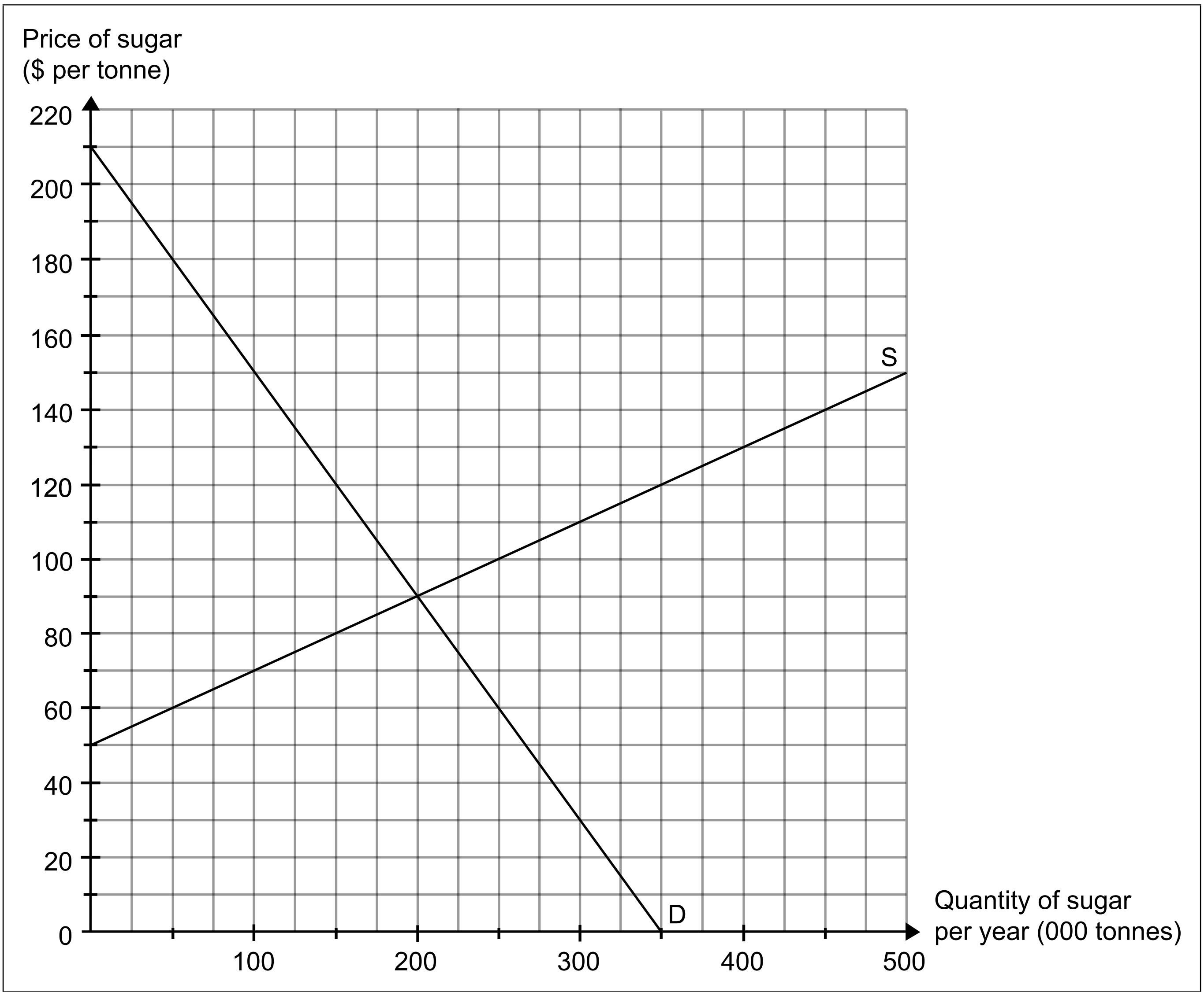
(d) Using an AD/AS diagram, explain **one** reason why deflation may lead to a higher level of unemployment. [4]



(This question continues on the following page)

(Question 3 continued)

The following diagram illustrates the annual demand and supply for sugar in Country C.



In order to reduce the consumption of sugar, the government of Country C has decided to impose an indirect tax. As a result, the new market supply curve for sugar is given by the function

$$Qs = -450 + 5P$$

where Qs is the quantity of sugar supplied, in thousands of tonnes per year, and P is the price of sugar in dollars ($) per tonne.

(e) (i) On the diagram, plot and label the new supply curve for sugar. [2]

(This question continues on the following page)

(Question 3 continued)

(ii) State the size of the tax per tonne of sugar. [1]

. . . .

. . . .

(iii) Calculate the producer surplus which will be earned following the imposition of the tax. [2]

. . . .

. . . .

. . . .

. . . .

(iv) Determine the incidence of the tax per tonne on producers of sugar in Country C. [1]

. . . .

. . . .

(This question continues on the following page)

(Question 3 continued)

(f) (i) With reference to the distribution of income, distinguish between equity and equality. [2]

. . . .

. . . .

. . . .

. . . .

(ii) Explain, using an appropriate example, why it might be argued that an indirect tax is not equitable. [4]

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

Please **do not** write on this page.

Answers written on this page
will not be marked.

Please **do not** write on this page.

Answers written on this page
will not be marked.