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MARKSCHEME

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ECONOMICS

Higher Level

Paper 3

18 pages

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Notes for examiners:

1. Whenever relevant, carry over marks must be awarded. If a candidate makes an error in calculation, but then uses the incorrect figure appropriately and accurately in later question parts, then the candidate may be fully rewarded. This is the "own-figure rule" and you should put OFR on the script where you are rewarding this. To do this you will need to use the on-page comment annotation tool ($\boxed{\mathbf{T}}$).

*2. Alternative approaches may be taken in responses to the **[4 mark]** questions that use A02 command terms. If this is the case and the alternative approaches are valid, then full credit should be given.*

1.   (a)   From the data provided, calculate

      (i)   the opportunity cost of producing each kilogram of wheat in Country A;   *[1]*

      80/100 = 0.8 kg rice   *[1]*
*An answer of 0.8 kg rice (without workings) is sufficient for **[1 mark]**.*

      (ii)   the opportunity cost of producing each kilogram of rice in Country A;   *[1]*

      100/80 = 1.25 kg wheat   *[1]*
*An answer of 1.25 kg wheat (without workings) is sufficient for **[1 mark]**.*

      (iii)   the opportunity cost of producing each kilogram of wheat in Country B;   *[1]*

      100/200 = 0.5 kg rice   *[1]*
*An answer of 0.5 kg rice (without workings) is sufficient for **[1 mark]**.*

      (iv)   the opportunity cost of producing each kilogram of rice in Country B.   *[1]*

      200/100 = 2.0 kg wheat   *[1]*
*An answer of 2.0 kg wheat (without workings) is sufficient for **[1 mark]**.*

    (b)   From your answers to part (a), identify which country holds a comparative advantage

      (i)   in wheat;   *[1]*

      Country B   *[1]*

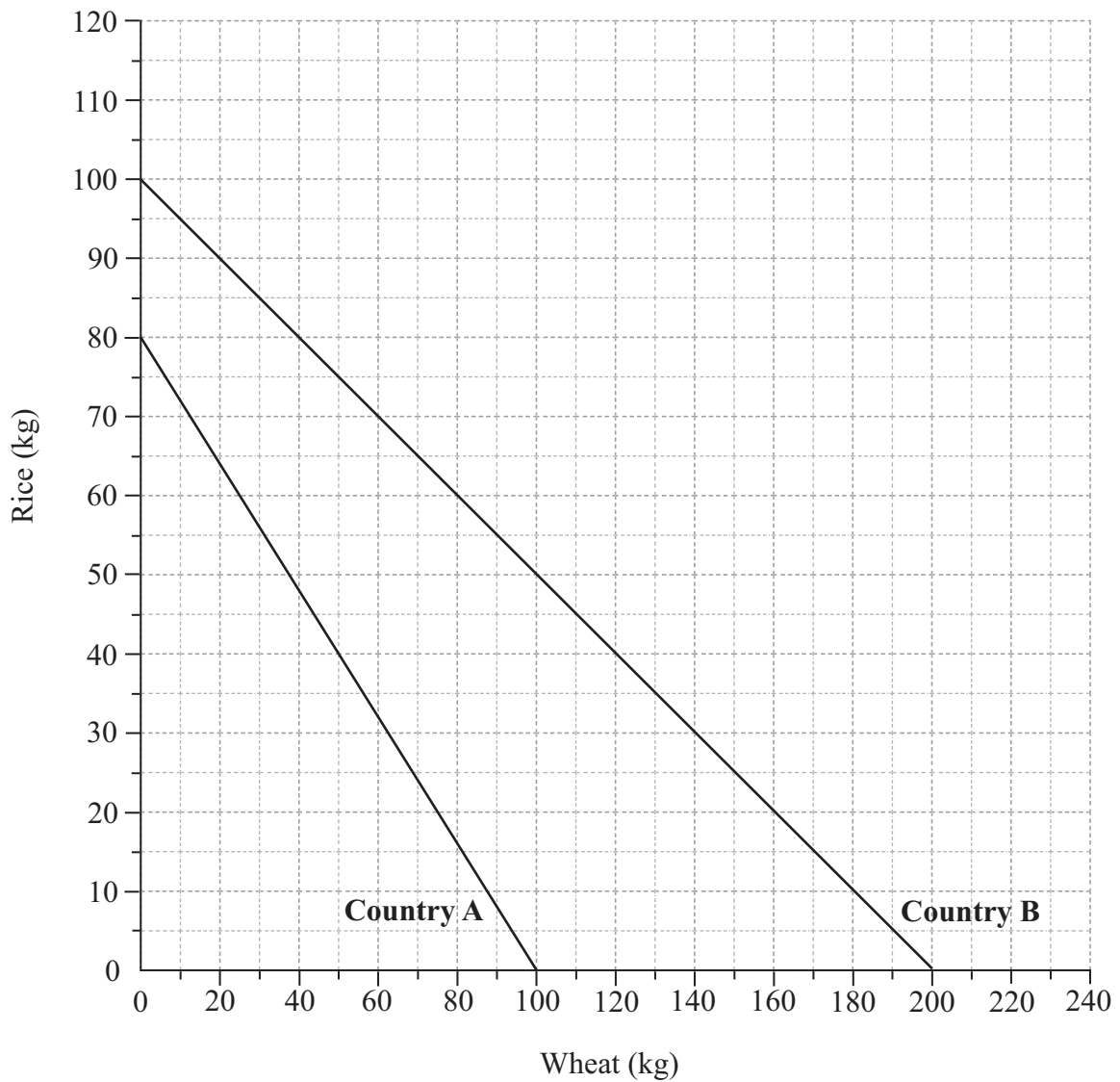   **(ii)   in rice.**   *[1]*

      Country A   *[1]*

      OFR may apply if answers in part (a) are incorrect

(c) **On the axes below, draw the production possibility curves (PPC) for Country A and Country B in the production of wheat and rice.** **[3]**

For one accurate PPC (linear with correct intercepts). **[1]**
For a second accurate PPC (linear with correct intercepts). **[1]**
For accurate labelling of both PPCs. **[1]**

(d)   **With reference to the diagram in part (c) and/or the data given, explain the theory of comparative advantage.**   *[4]*

| Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For the idea that a country has a comparative advantage in the production of a product for which it has the lower opportunity cost.	**1–2**
2	*The written response is clear.* For a clear explanation that the theory states a country should specialise in the production of those goods which can be produced at a lower opportunity cost. The data show that Country B has the comparative advantage in wheat, as its opportunity cost is lower (0.5 kg rice) than in Country A (0.8 kg rice), so Country B should specialise in the production of wheat and Country A has the comparative advantage in rice.	**3–4**

A response which explains that Country B should specialize in wheat as its PPC is flatter than that of Country A should be fully rewarded.

Candidates who do not refer to specialization may be awarded a maximum of *[3 marks]*.

A candidate who does not refer to the data and/or the diagram may be awarded a maximum of *[2 marks]*.

(e)   **(i)**   **State the monthly volume of domestic production before the subsidy is granted.**   *[1]*

         100 000 kg   *[1]*

         (ii)   **State the monthly volume of imports before the subsidy is granted.**   *[1]*

         500 000 kg   *[1]*

(iii) On the diagram, draw the new domestic supply curve for butter and label it S$_{+s}$. *[2]*
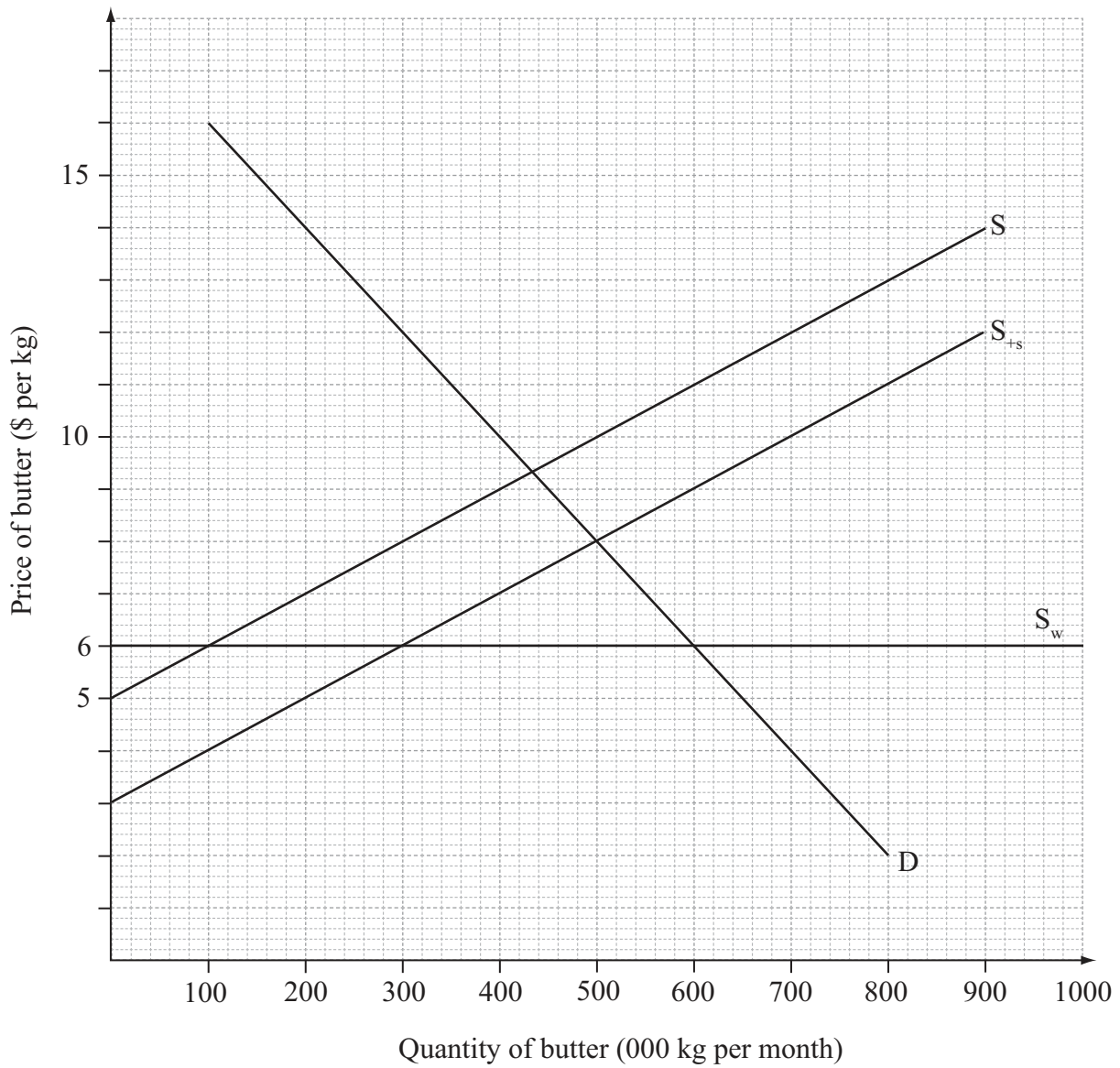
For drawing a new domestic supply curve below/to the right of the original. *[1]*
For drawing a new domestic supply curve accurately $2 below the original. *[2]*

Candidates who do not label the new supply curve may be awarded a maximum of 1 mark. Any supply curve label is accepted (it is not necessary for it to be S$_{+s}$.

(iv) Calculate the level of government spending required to finance this subsidy. *[2]*

Government spending = the final level of domestic output × the subsidy per unit
300 000 × 2 *[1]*
Any valid working is sufficient for [1 mark].

= $600 000 *[1]*

*An answer of $600 000 is sufficient for **[1 mark]**.*

OFR applies if the supply curve is drawn incorrectly and the student uses the incorrect quantity for the calculation (provided that the correct subsidy of $2.00 per unit is used).

(v)   Calculate the revenue earned by domestic producers of butter before the subsidy is granted.   *[1]*

Revenue = quantity (of domestic output) × price
100 000 × 6 = $600 000   *[1]*
*An answer of $600 000 (without workings) is sufficient for **[1 mark]**.*

(vi)   Calculate the revenue earned by domestic producers of butter after the subsidy is granted.   *[1]*

Final revenue = final quantity (of domestic output) × (price + subsidy)
(**OR**, final quantity (of domestic output) × final average revenue)
300 000 × (6 + 2) = $2 400 000   *[1]*
*An answer of $2 400 000 (without workings) is sufficient for **[1 mark]**.*

OFR applies if the supply curve is drawn incorrectly and the student uses the incorrect quantity for the calculation (provided that the correct subsidy of $2.00 per unit is used).

(f) **Using your answers to part (e) and/or your knowledge of economics, explain** ***two*** **disadvantages to Gondowa of the introduction of a subsidy on butter.** ***[4]***

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For any two disadvantages merely stated or expressed in a vague manner **OR** one disadvantage explained clearly. A candidate who merely states one disadvantage or explains it in a vague manner may be awarded ***[1 mark]***.	**1–2**
2	*The written response is clear.* For any two disadvantages explained clearly. A candidate who explains one disadvantage clearly and a second disadvantage is merely stated or expressed in a vague manner may be awarded ***[3 marks]***.	**3–4**

Disadvantages **may** include:

- A subsidy must be financed by government spending ($600 000 in this case). There will thus be an opportunity cost involved.
- A subsidy to domestic firms may be seen as protection. This may give rise to retaliation from trading partners.
- A subsidy will distort the pattern of trade, allowing domestic producers to survive in the face of more efficient foreign competition. Thus gains from comparative advantage will be lost, leading to reduced efficiency.
- A subsidy to domestic firms may be seen as protection. This may give rise to sanctions from the World Trade Organization.

Any other reasonable response which uses the response(s) to part (e).

2. **(a)** **From the equation, identify the slope of the demand function given above.** *[1]*

Slope $= -30$ *[1]*

(b) **Calculate the price at which the monthly quantity demanded would be**

(i) **210 units;** *[2]*

$210 = 420 - 30P$
$30P = 210$ *[1]*
Any valid working is sufficient for [1 mark].

$P = \$7$ *[1]*
An answer of P = \$7 without workings is sufficient for [1 mark].

(ii) **60 units.** *[2]*

$60 = 420 - 30P$
$30P = 360$ *[1]*
Any valid working is sufficient for [1 mark].

$P = \$12$ *[1]*
An answer of P = \$1) without workings is sufficient for [1 mark].

(c) (i) Label the axes on the following grid.   *[1]*

For both axes labelled accurately (P and Q are sufficient).   *[1]*

(ii) Construct the demand curve for Good X on the following grid.   *[1]*

For a correct demand curve (it is not necessary for the curve to extend to both axes).   *[1]*
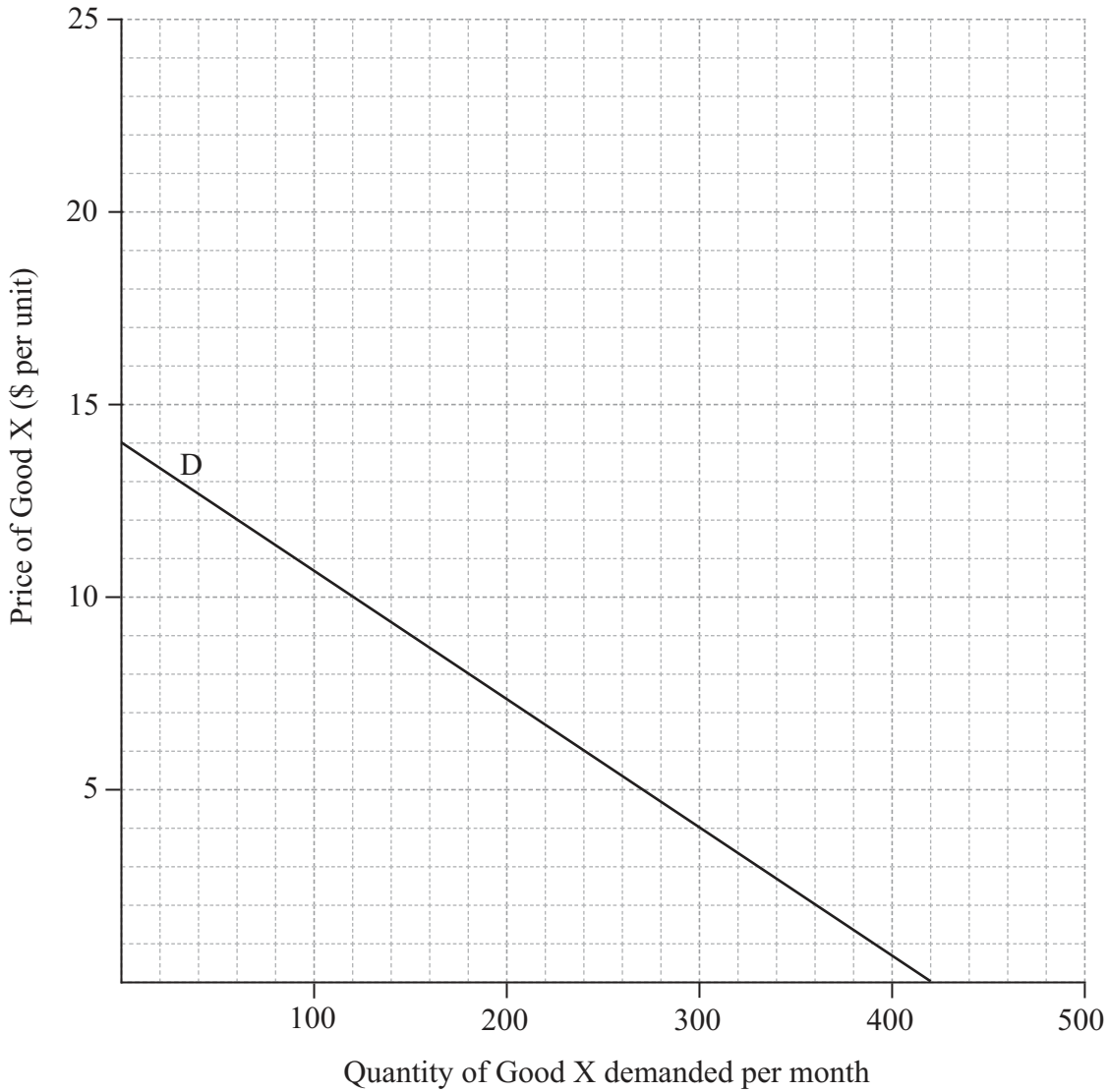
(d) **(i)** **Outline why the position of the demand curve will change if the demand function changes to**

$$Q_D = 500 - 30P.$$ *[2]*

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For a response which indicates that the demand curve will shift to the right.	**1**
2	*The written response is clear.* For a response which indicates that the demand curve will shift to the right (by 80 units) because the quantity demanded has increased (by 80 units) at each price.	**2**

(ii) **Outline how the steepness of the demand curve will change if the demand function changes to**

$$Q_D = 420 - 40P.$$ *[2]*

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For identifying that the demand will become less steep (shallower/flatter).	**1**
2	*The written response is clear.* For identifying that the demand curve will become less steep (shallower/flatter) with an accurate explanation, which states that, for any change in price, the change in quantity demanded will be greater, and hence the curve will be shallower/flatter. Full marks may be awarded if a candidate explains that since the slope of the demand function increases (from –30 to –40) but the axes are reversed (the independent variable is on the vertical) the demand curve will become shallower/flatter.	**2**

(e) **(i)** **Calculate the price elasticity of demand for Good A when its price falls between January 2014 and February 2014.** *[2]*

$$PED = \frac{\% \text{ change in } Q_D}{\% \text{ change in price}} = \frac{37.5}{-25}$$ *[1]*

*Any valid working is sufficient for **[1 mark]**.*
(mere stating of the formula should not considered as valid workings)

= 1.5 (or –1.5) *[1]*
*An answer of PED = 1.5 (or –1.5) without workings is sufficient for **[1 mark]**.*

(ii) **Calculate the cross elasticity of demand between Good A and Good B when the price of Good A falls between January 2014 and February 2014.** *[2]*

$$XED = \frac{\% \text{ change in } Q_D \,(\text{Good B})}{\% \text{ change in price}\,(\text{Good A})} = \frac{-5}{-25}$$ *[1]*

*Any valid working is sufficient for **[1 mark]**.*
(mere stating of the formula should not considered as valid workings)

= 0.2 *[1]*
*An answer of 0.2 without workings is sufficient for **[1 mark]**.*

(iii) **Calculate the cross elasticity of demand between Good A and Good C when the price of Good A falls between January 2014 and February 2014.** *[2]*

$$XED = \frac{\% \text{ change in } Q_D \,(\text{Good C})}{\% \text{ change in price}\,(\text{Good A})} = \frac{50}{-25}$$ *[1]*

*Any valid working is sufficient for **[1 mark]**.*
(mere stating of the formula should not considered as valid workings)

= –2 *[1]*
*An answer of –2 without workings is sufficient for **[1 mark]**.*

(f) **Using your answers to part (e), explain the relationship between Good A and Good B, and between Good A and Good C.** *[4]*

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.*	**1–2**
	For a response which identifies the nature of each relationship without appropriate explanation (*[1 mark]* per relationship) **OR** one relationship clearly explained.	
	A candidate who identifies one relationship accurately may be awarded *[1 mark]*.	
2	*The written response is clear.*	**3–4**
	For a response which identifies the nature of each relationship with appropriate explanation (*[2 marks]* per relationship clearly explained).	

A candidate who identifies two relationships but provides appropriate explanation for one only should be awarded *[3 marks]*.

An accurate explanation uses the sign of the XED and explains that if positive the two goods A and B are substitutes as the price of the one and the quantity demanded of the other move in the same direction but if negative as in the case of goods A and C they are complements as the price of the one and the quantity of the other move in opposite directions.

Candidates who have not provided accurate explanations for both relationships but who have made accurate reference to the size of the elasticities may be awarded an additional mark.

OFR applies only if calculations in part (e) are incorrect.

(g)   **Good J and Good K are both produced in Zestria. The price elasticity of demand for Good J, a primary commodity, is –0.2. The price elasticity of demand for Good K, a manufactured good, is –2.3.**

Explain *two* reasons why the demand for products such as Good K tends to be relatively price elastic compared to the demand for products such as Good J.   *[4]*

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* Any two reasons expressed in a vague manner **OR** one reason explained clearly.	**1–2**
	A candidate who explains one reason in a vague manner may be awarded *[1 mark]*.	
2	*The written response is clear.* Any two reasons explained clearly.	**3–4**
	A candidate who explains one reason clearly and a second reason in a vague manner may be awarded *[3 marks]*.	

Reasons **may** include:
- There tend to be fewer substitutes for primary products. Hence demand would be relatively price inelastic. However, manufactured products tend to have elastic demand because there are likely to be more substitutes owing to the greater opportunity for product differentiation.
- Spending on manufactured goods tends to represent a considerable part of consumer income. As a result, demand would be relatively price elastic. However, spending on primary commodities is likely to take a smaller proportion of consumer income. As a result, demand would be relatively price inelastic.
- Primary commodities are often necessities and hence demand would be price inelastic. However, manufactured goods are more likely to be luxuries – so demand would be more price elastic.

Any reasonable response.

3.   (a)   Explain the differences between GDP, green GDP and GNI.   *[4]*

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For a response which demonstrates clear understanding of the distinction between two of the three concepts or a limited understanding of the distinction between the three concepts.	**1–2**
2	*The written response is clear.* For a response which demonstrates clear understanding that the difference between GDP and GNI is that GDP is a measure of the value of output produced within the boundaries of an economy independently of the nationality of the factors of production involved whereas GNI is a measure of incomes received by the residents of a country independently of the geographic location of the factors of production involved. Green GDP focuses on the environmental cost of production by subtracting the costs of environmental degradation from GDP. Responses that clearly define GDP and then explain that GNI is GDP plus incomes earned/received from abroad minus incomes paid/sent abroad should be considered an accurate distinction of these two terms.	**3–4**

(b)   Using the data in Table 1,

(i)   calculate the GDP of Country X for 2012.   *[2]*

$$GDP = C + I + G + (X - M) = 125.6 + 33.9 + 89.1 + (78.5 - 48.7)$$ *[1]*

Any valid working is sufficient for [1 mark].
(mere stating of the formula should not considered as valid workings)

$278.4 billion   *[1]*
An answer of $278 400 000 000 (or $278.4 billion) without workings is sufficient for [1 mark].

(ii)   calculate the GNI of Country X for 2012.   *[2]*

$GNI = GDP +$ factor income earned abroad $-$ factor income paid abroad
$278.4 + 29.6 - 22.3$ *[1]*
Any valid working is sufficient for [1 mark].
(mere stating of the formula should not considered as valid workings)

$285.7 billion   *[1]*
An answer of $285 700 000 000 (or $285.7 billion) without workings is sufficient for [1 mark].

OFR applies

(iii) **calculate the balance of trade in goods and services for Country X in 2012.** *[2]*

Export of goods and services 78.5
Import of goods and services 48.7
78.5 – 48.7 *[1]*
Any valid working is sufficient for [1 mark].

$29.8 billion (a surplus) *[1]*
An answer of $29 800 000 000 (or $29.8 billion) without workings is sufficient for [1 mark].

Year	Nominal GDP ($ billions)	GDP deflator	Real GDP ($ billions)	Annual real growth rate (%)	Population	Real GDP per capita ($)
2014	308.12	98.9	**311.55**		13 273 644	**23 471**
2015	321.99	100	**321.99**	**3.35**	13 340 012	**24 137**
2016	332.65	102.2	**325.49**	**1.09**	13 473 412	**24 158**

(c) **(i)** **Using the data in Table 2 calculate the level of real GDP for Country X for 2014 to 2016. Enter your results in Table 2.** *[3]*

Allocate *[1 mark]* for each correctly completed cell. *[3 x 1]*

(ii) **Outline the difference between nominal GDP and real GDP.** *[2]*

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For a vague reference to the effects of changes in prices.	**1**
2	*The written response is clear.* For demonstrating a clear understanding that real GDP adjusts nominal GDP for changes in the average price level (for inflation).	**2**

(d) **Calculate the annual real growth rate for Country X for 2015 and 2016. Enter your results in Table 2.** *[2]*

Allocate *[1 mark]* for each correct result. *[2 x 1]*

OFR applies

(e) **Using the data in Table 2 calculate the real GDP per capita for Country X for 2014 to 2016. Enter your results in Table 2.** *[3]*

Answer to the nearest $ should be accepted.
Allocate *[1 mark]* for each correct result. *[3 x 1]*

OFR applies

(f)   **Identify which of the three letters (A, B or C) on the following business cycle diagram best describes the position of Country X in 2016.**   *[1]*

For indicating the position of Country X in 2016 is at point A.   *[1]*

OFR applies if answers to part (c)(i) are incorrect.

(g)   **Explain *two* reasons why real GDP per capita may not be an accurate measure of living standards in Country X.**   *[4]*

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For any two reasons expressed in a vague manner **OR** one reason explained clearly. A candidate who explains one reason in a vague manner may be awarded *[1 mark]*.	**1–2**
2	*The written response is clear.* For any two reasons explained clearly. A candidate who explains one reason clearly and a second reason in a vague manner may be awarded *[3 marks]*.	**3–4**

Reasons which **may** be explained include:
- it ignores distributional issues as it is merely an average
- no consideration of environmental degradation
- no information provided on the composition of output
- the figures do not include the value of leisure
- no consideration of non-marketed output (*eg* parallel economy, DIY, subsistence farming).

Any other valid reason should be rewarded.