

Markscheme

November 2018

Economics

Higher level

Paper 3

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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.**
- 2. Alternative approaches may be taken in responses to the [4] 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) (i) Calculate Firm A’s average fixed costs when it is producing 125 cartons of coffee per month. [2]

$$\frac{500}{125}$$

Identification of FC at \$500 or any valid working is sufficient for [1].

= \$4

An answer of \$4 or 4 (without working) is sufficient for [1].

- (ii) Calculate Firm A’s average variable costs when it is producing 125 cartons of coffee per month. [2]

$$\frac{1500}{125}$$

Identification of VC at \$1 500 or any valid working is sufficient for [1].

= \$12

An answer of \$12 or 12 (without working) is sufficient for [1].

- (b) (i) Using **Figure 2**, calculate the average fixed costs when 80 cans per month are produced. [1]

$$(25 - 20) = \$5$$

An answer of \$5 is sufficient for [1].

- (ii) Using **Figure 2**, calculate the total costs when 55 cans per month are produced.

[2]

$$30 \times 55$$

Identification of ATC at \$30 or any valid working is sufficient for [1].

$$= \$1650$$

An answer of \$1650 or 1650 (without working) is sufficient for [1].

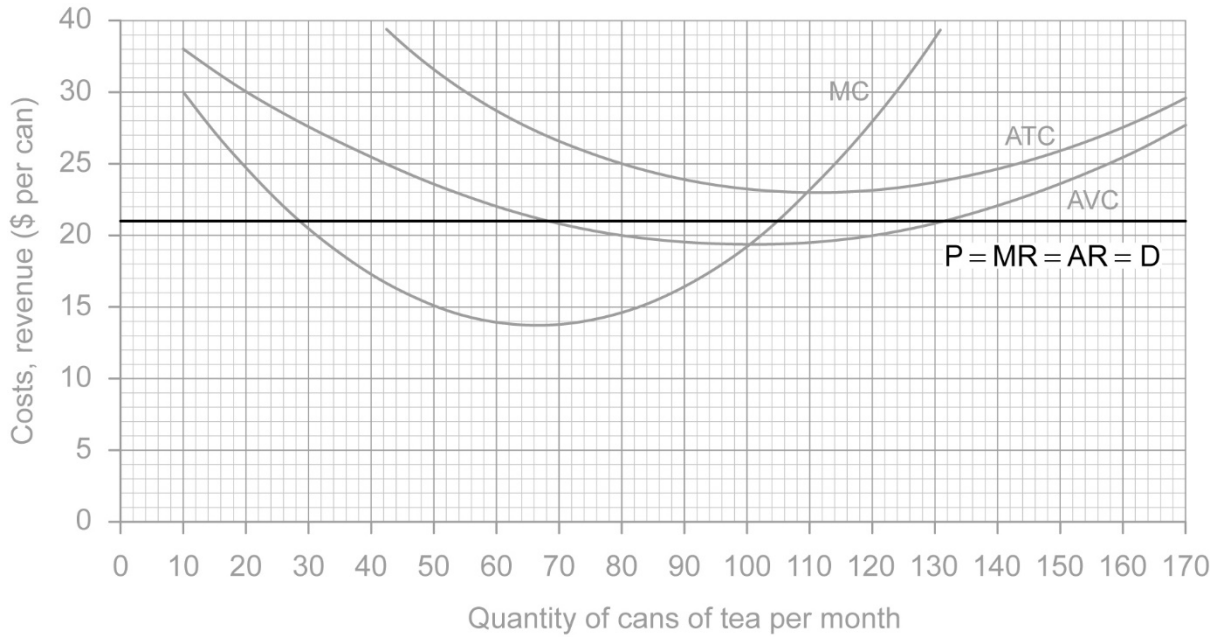
NB *If the candidate identifies ATC as \$29 or \$31, (with a final answer of \$1595 or \$1705) this should be fully rewarded.*

- (iii) Explain why in the short run, as output increases, marginal costs typically decrease and then increase.

[4]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>The written response is limited.</i>	1–2
	<p>For a limited explanation that marginal product initially tends to increase but then because of a fixed input (factor), diminishing returns cause MP to fall.</p> <p>OR</p> <p>MP falls because of a fixed input, which increases the additional costs of one more unit, and so MC increases.</p> <p><i>Allow [1] mark only if “productivity” used instead of MP or if fixed input not mentioned.</i></p> <p><i>An algebraic response (see below) without any reference to The Law of Diminishing Marginal Returns may be awarded a maximum of [2] marks.</i></p>	
2	<i>The written response is accurate.</i>	3–4
	<p>For explaining that marginal product initially tends to increase, due to specialization, but then because of a fixed input (factor) that has to be shared, diminishing returns cause MP to fall.</p> <p>AND EITHER</p> <p>as MP falls, the additional costs of one more unit of output will begin to increase and so MC increases.</p> <p>OR</p> $MC = \frac{\Delta VC}{\Delta Q} = \frac{\Delta(wL)}{\Delta Q} = w \left(\frac{\Delta L}{\Delta Q} \right) = w \left(\frac{1}{MP} \right)$ <p>so, if MP increases, then MC will decrease and, when MP decreases (as a result of the LoDMRs), then MC will increase.</p>	

- (c) (i) Using this information, draw and label the average revenue curve on **Figure 2**. [1]



A correctly labelled AR (or P/MR/D) line is sufficient for [1].

- (ii) Using **Figure 2**, identify the quantity of cans per month Firm B must produce in order to maximize profits. [1]

Where marginal revenue equals marginal cost.

An answer of 105 is sufficient for [1].

If the candidate identifies the quantity as 104 or 106 this should be fully rewarded.

OFR may apply.

- (iii) Calculate the economic profit when Firm B is producing at the output level identified in part (c)(ii). [2]

105 (21 – 23)

Any valid working is sufficient for [1].

= -\$210 or a loss of \$210

An answer of -\$210 or a loss of \$210 (without working) is sufficient for [1].

OFR may apply — eg -\$208 if 104 cans identified in (c)(ii) OR -\$212 if 106 cans identified in (c)(ii).

- (d) Sometimes a firm continues to produce in the short run, even when it is making an economic loss. Explain why the firm might choose to do this.

[2]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>There is limited understanding.</i>	1
	For a response that the price is above the shut-down price (minimum AVC) OR the firm is covering its variable costs.	
2	<i>There is clear understanding.</i>	2
	For a response that in the short run, the firm should continue to produce provided price covers (average) variable costs, since it is making a contribution to fixed costs OR the firm's losses are less than its fixed costs, so its losses would be greater if it shut down.	

- (e) Outline why a perfectly competitive firm is a "price taker".

[2]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>There is limited understanding.</i>	1
	For a response that it does not have market power and so must accept the market price.	
2	<i>There is clear understanding.</i>	2
	If the firm raises the price both its quantity sold and revenue will drop to zero (there is also no benefit from lowering its price, since it can sell any amount at the market price).	

- (f) Firm B and all the other firms in the tea market begin to sell their tea in distinctive packages and many differentiate their product with organic tea or fruit flavours. Explain how the demand curve faced by Firm B will change as a result.

[2]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>There is limited understanding.</i>	1
	For a response that the demand curve will now slope down.	
2	<i>There is clear understanding.</i>	2
	For a response that the demand curve will slope down because the firm now has the market/monopoly power (or the ability to be a price maker) OR that the demand curve will slope down because it is now a monopolistic competitor OR the firm's demand curve is no longer perfectly elastic because it now has the market power to change its price.	

(g) Firm B conducted a market survey and found out that the price elasticity of demand for its brand of tea is -0.8 among urban customers, whereas it is -1.2 among customers in rural areas. The sales director said “This information could help Firm B to raise its revenue, by trying to separate the two markets, provided that certain conditions are satisfied”. Explain this statement.

[4]

Firm B could:

- price discriminate in two separate markets (charge different prices in different/separate markets)
- charge a higher price to urban customers (or a lower price to rural)
- when demand is inelastic a higher price yields more revenue (or when elastic demand a lower price yields more revenue)
- Firm B needs to separate the two markets so no opportunity for resale (or Firm B needs to have some monopoly/price-setting power).

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>There is limited understanding.</i>	1–2
	Award [1] for one of the points above.	
	Award [2] for two of the points above.	
2	<i>There is clear understanding.</i>	3–4
	Award [3] for three of the points above.	
	Award [4] for all of the four points above.	

2. (a) (i) Define the term *social (community) surplus*. [2]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>Vague definition</i> The surplus that consumers and producers receive / enjoy.	1
2	<i>Accurate definition</i> The sum of the consumer surplus and producer surplus received / enjoyed.	2

(ii) Calculate social (community) surplus in the market for cotton. [2]

consumer surplus
$$\frac{(10 \times 50)}{2} \times 1000 = 250\,000$$

producer surplus
$$\frac{(6 \times 50)}{2} \times 1000 = 150\,000$$

social surplus
$$250\,000 + 150\,000$$

Any valid working is sufficient for [1].

= \$400 000

OR

$$\frac{(16 \times 50)}{2} \times 1000$$

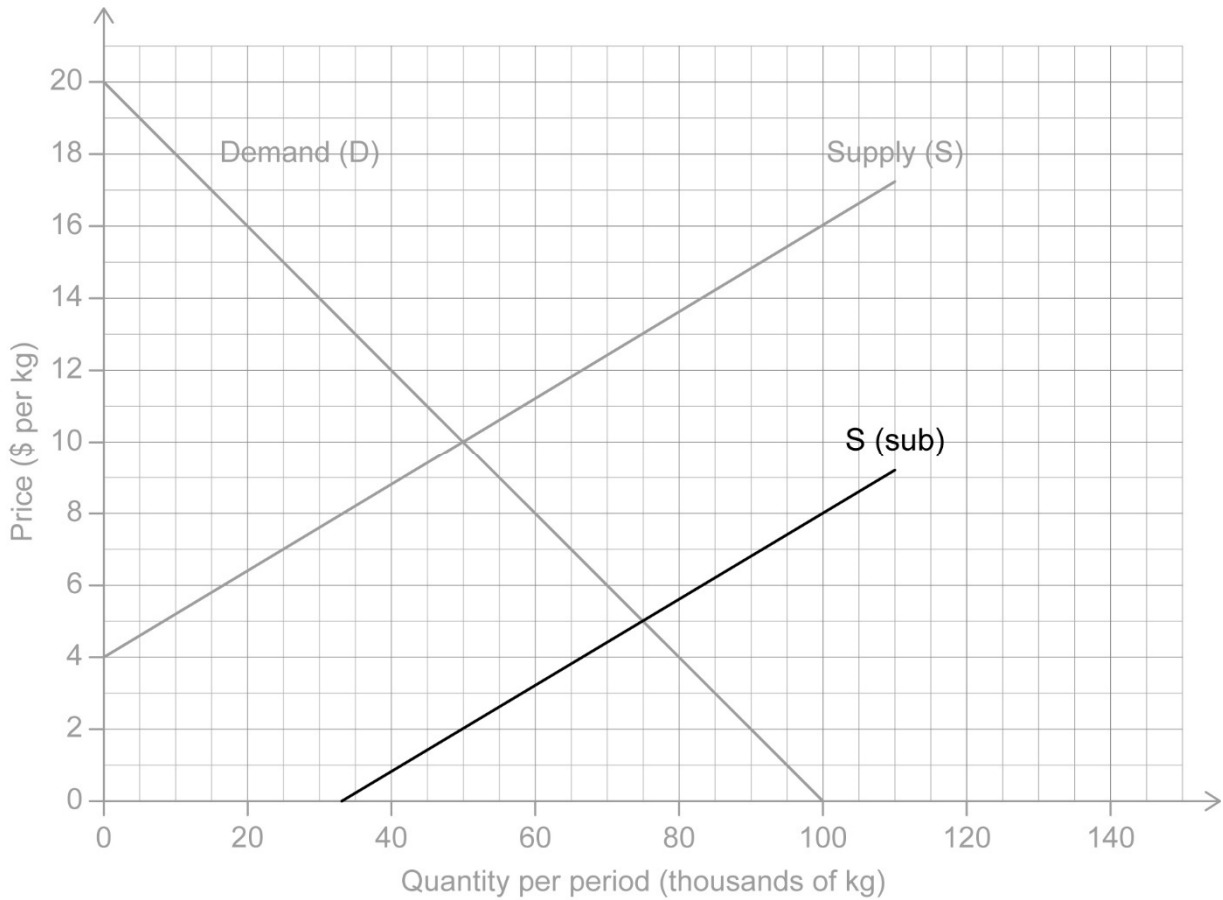
Any valid working is sufficient for [1].

= \$400 000

An answer of \$400 000 or 400 000 (without working) is sufficient for [1].

- (b) (i) Draw and label the new supply curve following the granting of the subsidy to domestic cotton producers on **Figure 3**.

[2]



Drawing a new supply curve parallel and below / to the right of the original supply curve is sufficient for [1].

- (ii) Calculate the cost to the government of San Marcus of providing this subsidy to domestic cotton producers.

[2]

$$8 \times 75 (\times 1000)$$

Any valid working is sufficient for [1].

$$= \$600\,000$$

An answer of 600 000 or \$600 000 (without working) is sufficient for [1].

OFR may apply.

- (iii) Calculate the resulting change in producer surplus following the introduction of the subsidy to cotton producers in San Marcus. [2]

$$\frac{(50 + 75)}{2} \times (13 - 10) \times 1000$$

OR

$$(0.5 \times 75 \times 9) - (0.5 \times 50 \times 6) = 337.5 - 150$$

Valid working may include:

- correct workings for initial PS ($0.5 \times 50 \times 6$)
- correct workings for final PS ($0.5 \times 75 \times 9$)
- correct workings for the trapezium $\frac{(50 + 75)}{2} \times (13 - 10) \times 1000$

Any valid working is sufficient for [1].

$$= \$187\,500$$

An answer of 187500 or \$187500 (without working) is sufficient for [1].

OFR may apply.

- (iv) Calculate the change in the consumer surplus resulting from the subsidy. [2]

$$\frac{(50 + 75)}{2} \times (10 - 5) + 1000$$

OR

$$(0.5 \times 75 \times 15) - (0.5 \times 50 \times 10) = 562.5 - 250$$

Any valid working is sufficient for [1].

Valid working may be:

- correct workings for initial CS ($0.5 \times 50 \times 10$)
- correct workings for final CS ($0.5 \times 75 \times 15$)
- correct workings for the trapezium $\frac{(50 + 75)}{2} \times (10 - 5) + 1000$

$$= \$312\,500$$

An answer of 312500 or \$312500 (without working) is sufficient for [1].

OFR may apply.

(c) Explain **two** reasons why the government of San Marcus may have decided to grant a subsidy to its cotton producers.

[4]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>The written response is limited.</i>	1–2
	<p><i>For a limited explanation of one reason, award a maximum of [1].</i></p> <p><i>For an accurate explanation of one reason or a limited explanation of two reasons, award a maximum of [2].</i></p> <p><i>Reasons may include:</i></p> <ul style="list-style-type: none"> • to assist buyers of cotton • to assist producers (farmers) of cotton • to assist the textile industry • to increase employment (lower unemployment) • to decrease urbanization • to promote exports/reduce imports. <p><i>Any other valid response.</i></p>	
2	<i>The written response is accurate.</i>	3–4
	<p><i>For providing an accurate explanation of one reason and a limited explanation of a second reason, award a maximum of [3].</i></p> <p><i>For providing two accurate reasons, award a maximum of [4].</i></p> <p><i>Accurate explanations may include:</i></p> <ul style="list-style-type: none"> • to assist buyers of cotton the cotton subsidy will decrease production costs, increase supply and thus decrease price • to assist producers (farmers) of cotton as the price per unit earned following the subsidy as well as the amount produced and sold will be greater leading to higher revenues • to assist the textile industry as cotton is (as stated) an input and thus costs of production will decrease making textiles cheaper and increasing profitability • to increase employment (lower unemployment) as more output in the cotton and textile markets will require more workers • to increase exports and/or reduce imports by making the cotton produced in San Marcus more competitive in the international market. <p><i>Any valid response.</i></p>	

(d) State **two** functions of the WTO. [2]

Allocate [1] for each valid function.

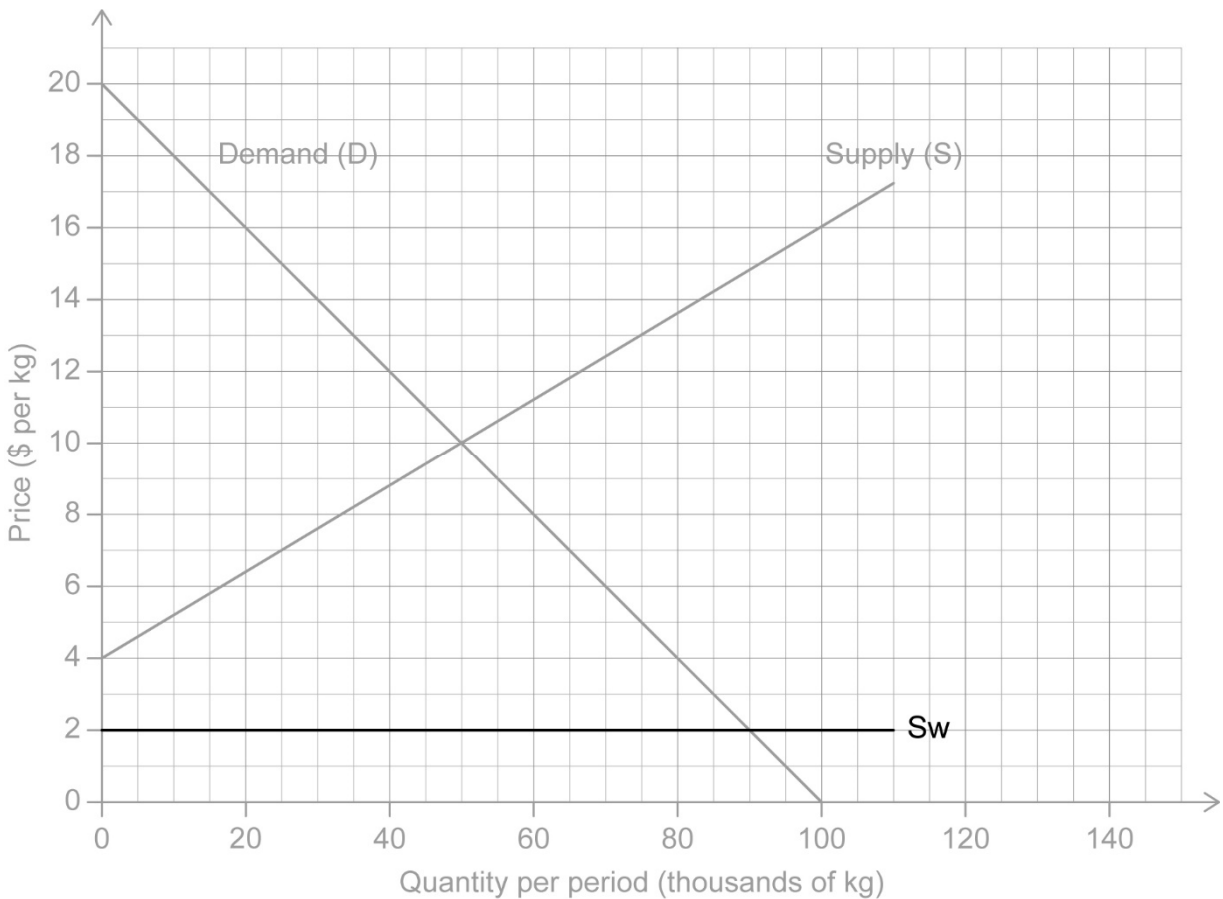
Functions may include:

- promotes trade liberalization
- sets trade rules
- ensures that trade rules are adhered to
- settles trade related disputes
- trade-related technical assistance
- a forum for trade negotiations.

NB Describing trade liberalization in two ways (eg removal of barriers, lowering of tariffs) only counts as one function.

Any other valid function(s).

(e) (i) Plot and label the world cotton supply curve that San Marcus now faces on **Figure 3**. [1]



Award [1] for an accurate and labelled world cotton supply curve.

- (ii) With reference to your answer in part b(ii), calculate the change in the cost of financing the \$8 per kg subsidy to the government of San Marcus following the decision to import cotton from the world market. [2]

initial cost
= \$600 000

Calculated earlier on (b)(ii), OFR applies.

new cost of subsidy
 $8 \times 50 \times 1000 = \$400\,000$

new cost of subsidy minus initial cost
 $\$400\,000 - \$600\,000$

Any valid working is sufficient for [1].

= $-\$200\,000$ or a decrease of \$200 000

An answer of $-\$200\,000$ or $-200\,000$ is sufficient for [1].

OFR applies.

- (iii) Explain one possible advantage **and** one possible disadvantage for the San Marcus economy of the decision to join the WTO and slowly liberalize trade.

[4]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>The written response is limited.</i>	1–2
	<p>Award a maximum of [1] for a limited explanation of one advantage or disadvantage.</p> <p>Award a maximum of [2] for an accurate explanation of one advantage or one disadvantage or a limited explanation of both.</p> <p><i>Advantages may include:</i></p> <ul style="list-style-type: none"> • cheaper imports for consumers • cheaper imported inputs for producers • greater scope for exports • more competition for exporting and importing sectors • exporting domestic firms enjoy EOS. <p><i>Disadvantages may include:</i></p> <ul style="list-style-type: none"> • overspecialization • possibility of job losses • greater import penetration • difficulty for infant industries to grow • loss of tariff revenue. <p><i>Any valid response.</i></p>	
2	<i>The written response is accurate.</i>	3–4
	<p>Award a maximum of [3] for providing an accurate explanation of one advantage or one disadvantage and a limited explanation of a disadvantage or advantage.</p> <p>Award a maximum of [4] for providing two accurate explanations.</p> <p><i>Accurate explanations of advantages may include:</i></p> <ul style="list-style-type: none"> • since tariffs and other trade restrictions will be removed, consumers will enjoy cheaper and a greater variety of imports • since tariffs and other trade restrictions will be removed, production costs for domestic firms using imported inputs will be lower • domestic firms will have easier access to foreign markets increasing their exports • domestic firms that grow may face lower average costs. <p><i>Accurate explanations of disadvantages may include:</i></p> <ul style="list-style-type: none"> • overspecialization may render the economy vulnerable to changes in the prices of exports and imports • domestic industries unable to compete with foreign producers may suffer job losses • harder to establish new industries due to the competitive advantage of foreign producers • loss of tariff revenues which could be used for public investment. <p><i>Any valid response.</i></p>	

NB Responses should refer to the economy of San Marcus, not just one industry such as the consumers or producers of cotton.

3. (a) Calculate gross domestic product (GDP) for Country X in 2015. [2]

$$\begin{aligned} \text{GDP} &= C + I + G + (X - M) \\ &= 745 + 229 + 437 + 234 - 289 \end{aligned}$$

Any valid working is sufficient for [1].

$$= \$1356 \text{ billion}$$

An answer of 1356 billion or \$1356 (without working) is sufficient for [1].

- (b) Calculate gross national income (GNI) for Country X in 2015. [1]

$$\begin{aligned} \text{GDP} + \text{net factor income} &= \text{GNI} \\ 1356 - 111 &= \$1245 \text{ billion} \end{aligned}$$

An answer of 1245 (without working) is sufficient for [1].

OFR applies.

- (c) Calculate the rate of consumer price inflation in 2016. [1]

$$\left[\frac{(109.21 - 105.35)}{105.35} \right] \times 100 = 3.66\%$$

An answer of 3.66 (without working) is sufficient for [1].

- (d) Using the GDP deflator, calculate the percentage change in real GDP between 2014 and 2015. [2]

$$\begin{aligned} \text{real GDP in 2015} \\ \frac{4814}{105.11} \times 100 &= 4579.96 \end{aligned}$$

$$\begin{aligned} \text{rate of change} \\ \left[\frac{(4579.96 - 4465)}{4465} \right] \times 100 \end{aligned}$$

Any valid working is sufficient for [1].

$$= 2.57\%$$

An answer of 2.57 (without working) is sufficient for [1].

- (e) (i) Identify the term represented in **Figure 4** by the letter **V**. [1]

Income **OR** factor income **OR** household income **OR** factor payments.

Award [1] for identifying the term correctly.

- (ii) Identify the term represented in **Figure 4** by the letter **M**. [1]

imports

Award [1] for identifying the term correctly.

- (f) State the **four** factor payments which constitute the income flow in the circular flow or income model. [2]

rent, wages, interest and profit

*Award [1] for **three** payments provided.*

*Award [2] for **four** payments provided.*

- (g) Define the term *leakages*. [2]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>Vague definition.</i>	1
	The idea that it is money leaving the circular flow or listing the three leakages.	
2	<i>Accurate definition.</i>	2
	An explanation that a leakage represents the portion of national income which is not spent on domestic output/domestic consumption.	

- (h) Determine the size of the budget surplus/deficit and state which in **Figure 4**. [1]

budget surplus of \$5 billion

Award [1] for determining the size of the budget correctly.

- (i) Using an AD/AS diagram, explain how this may affect the level of unemployment. [4]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>The written response is limited.</i>	1–2
	For an AD/AS diagram showing a shift of AD to the left and a decrease in the equilibrium level of real output OR for explaining that an increase in taxation will reduce consumption and/or investment, which lowers AD. This leads to a decrease in the level of output and, therefore, an increase in the level of unemployment.	
2	<i>The written response is accurate.</i>	3–4
	For an AD/AS diagram showing a shift of AD to the left and a decrease in the equilibrium level of real output AND for explaining that an increase in taxation will reduce consumption and/or investment, which lowers AD. This leads to a decrease in the level of output and, therefore, an increase in the level of unemployment.	

NB A response in which the AS curve shifts to the left, on the basis that the increase in taxation may be indirect taxation, should be rewarded.

- (j) Calculate the average tax rate for an individual who earns \$64 000 per year. [2]

$$12\,000 \times 5\% + 15\,500 \times 12\% + 32\,500 \times 21.5\% + 4\,000 \times 32\% = \$10\,727.50$$

Working is not required.

average tax rate

$$\left(\frac{10\,727.5}{64\,000} \right) \times 100$$

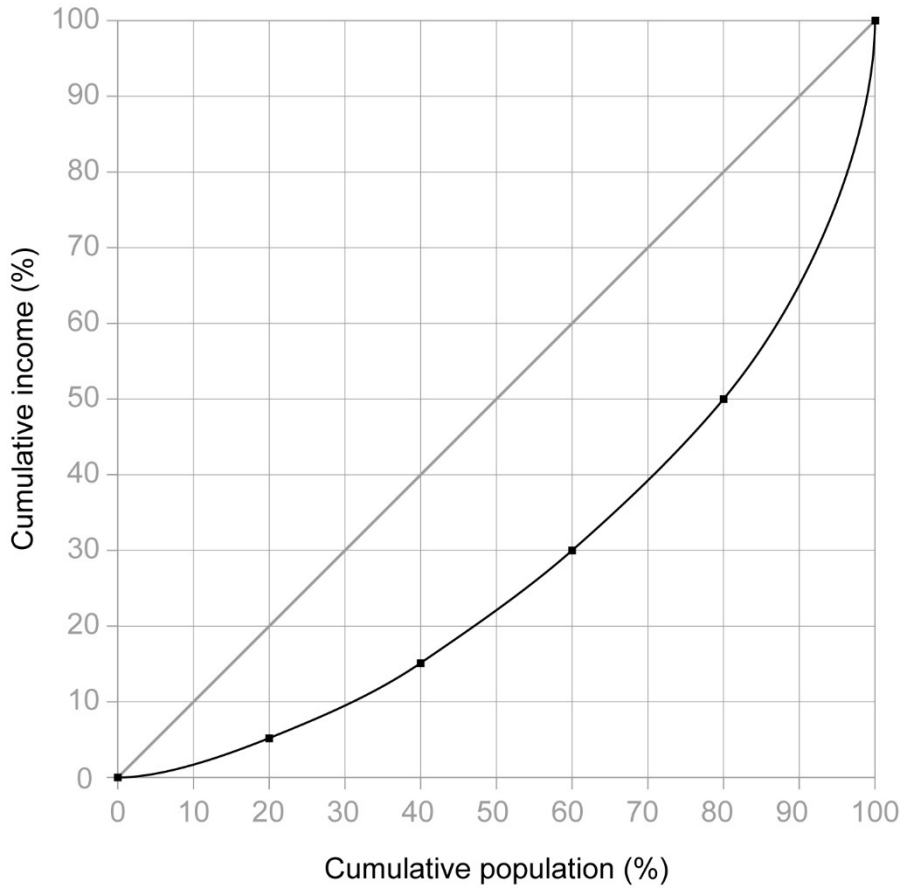
Any valid working is sufficient for [1].

$$= 16.76\%$$

An answer of 16.76 or 0.17 (without working) is sufficient for [1].

(k) Draw and label the Lorenz curve diagram for Country A in **Figure 5**.

[2]



Award [1] for an accurate Lorenz curve.

OR

Award [1] for a Lorenz curve which is inaccurate but which goes from (0,0) to (100,100) and which lies below the line of perfect equality **AND** axes labelled accurately.

Award [2] for an accurate Lorenz curve with axes correctly labelled.

NB The term "cumulative" is **not** necessary for labelling of axes.

- (I) Explain how an increase in the top rate of direct tax from 32 % to 36 % might affect equity and efficiency in Country A.

[4]

Level		Marks
0	<i>The work does not meet a standard described by the descriptors below.</i>	0
1	<i>The written response is limited.</i>	1–2
	For explaining that an increase in the top rate of tax will make the tax system more progressive, which will make the distribution of income less unequal and may be seen as more fair/equitable OR for explaining that an increase in the top rate of tax could reduce efficiency in Country A as it might act as a disincentive for work and investment OR for explaining that an increase in the top rate of tax could increase efficiency because higher tax revenue could permit more investment in human capital and infrastructure.	
2	<i>The written response is accurate.</i>	3–4
	For explaining that an increase in the top rate of tax will make the tax system more progressive, which will make the distribution of income less unequal and may be seen as more fair/equitable AND for explaining that an increase in the top rate of tax could reduce efficiency in Country A as it might act as a disincentive for work and investment (OR for explaining that an increase in the top rate of tax could increase efficiency because higher tax revenue could permit more investment in human capital and infrastructure).	

NB A response which explains that inequality will be reduced, without explicitly using the term equality/inequality, should be rewarded.
