Markscheme

November 2017

Economics

Higher level

Paper 3

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) State **one** characteristic of a perfectly competitive market.   **[1]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	Any **one** of the following characteristics: • a large number of firms • homogeneous product • absence of barriers to entry (and exit) • price takers • perfect information.	1

(ii) Outline the reason why the coefficient of price in the supply function above is positive.   **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*Vague understanding.*	1
	The idea that it is a result of the law of supply OR that there is a positive relationship between price and quantity supplied	
2	*Clear understanding.*	2
	A brief explanation that at higher prices, quantities supplied are greater since the profit margins of firms are higher (**or** reference to the idea that marginal costs are likely to increase as output increases **or** another valid incentive such as to gain more revenue)	

(b)   Calculate the equilibrium price **and** the equilibrium quantity in this market.   **[2]**

Qd = Qs
64 − 2P = 4P − 8
64 + 8 = 4P + 2P
72 = 6P
P = $12.00   **[1]**

Q = 4 × 12 − 8
Q = 40 000 units   **[1]**
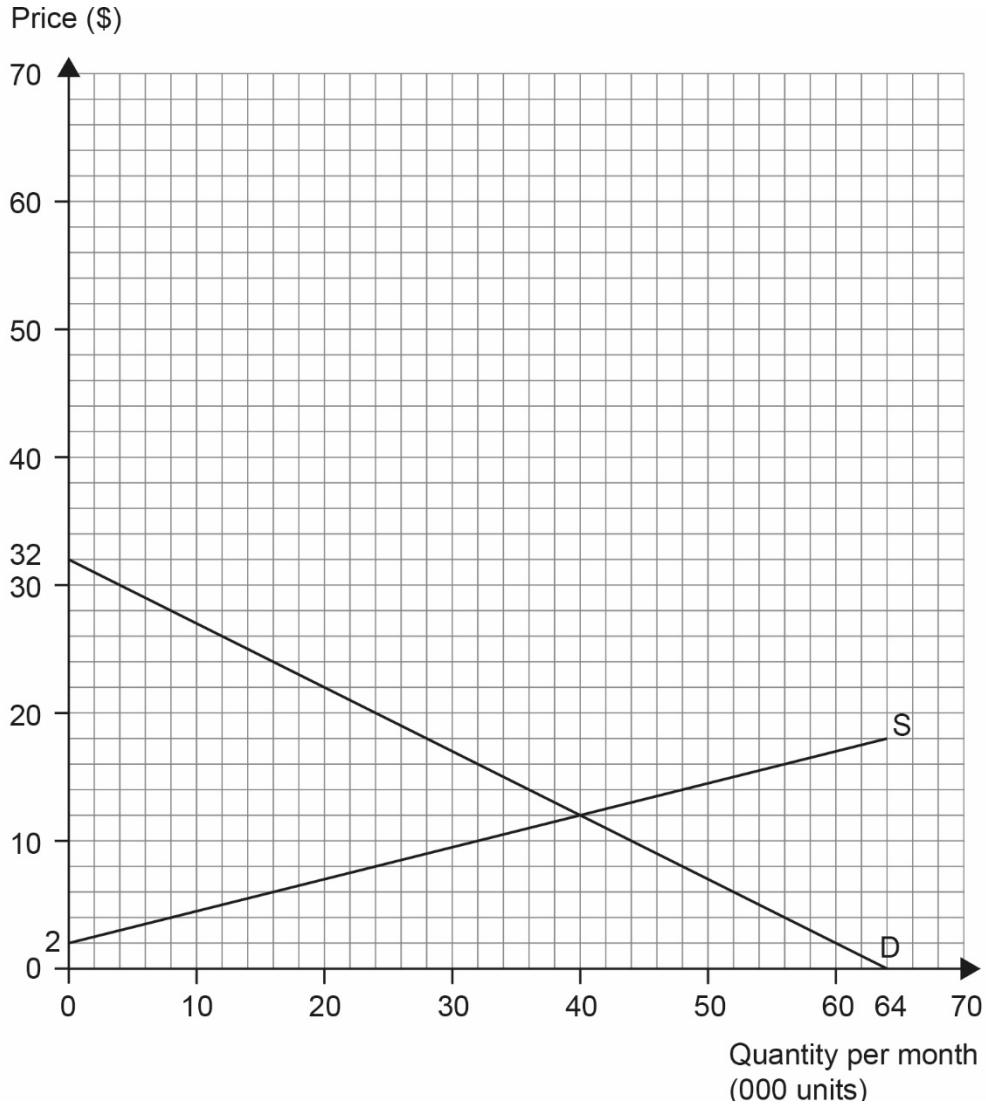
The $ sign is required, but "units" is not.

*If both are correct but no valid workings are provided a maximum of **[1]** may be awarded.*

(c)   Using the functions, plot the following in the grid below:

(i)   a fully labelled market demand curve.   **[1]**

(ii)   a fully labelled market supply curve.   **[1]**

For a correctly plotted and labelled demand curve.   **[1]**
For a correctly plotted and labelled supply curve.   **[1]**
*If labels are missing or incorrect a maximum of **[1]** may be awarded.*
*If both labels are missing/incorrect then award **[0]** marks for part (i) and **[1]** mark for*
part (ii).

(d) Using an appropriate example, explain the significance of price elasticity of demand in relation to the size of the tax revenues a government collects following the imposition of an indirect tax. **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*The written response is limited.*	1–2
	For explaining that if demand is price inelastic then tax revenues collected by the government would be higher than if demand is price elastic as quantity demanded would decrease by less following the increase in price **or** for providing an appropriate example(s).	
2	*The written response is accurate.*	3–4
	For explaining that if demand is price inelastic then tax revenues collected by the government would be higher than if demand is price elastic as quantity demanded would decrease by less following the increase in price **and** for providing an appropriate example(s). If the example is not explained then the candidate can be awarded up to **[3]**.	

The example should relate to product(s) with price elastic and/or price inelastic demand.

A numerical example which shows the effect of an indirect tax on tax revenue (but not merely producer revenue) may also be fully rewarded.

If candidates confuse tax revenue with producer revenue, but demonstrate understanding of elasticities and provide a relevant example, they may be awarded a maximum of [2] marks.

***N.B.:** reference to percentage changes/proportionality is NOT required.*

(e) (i)   State the type of indirect tax under consideration.   **[1]**

          Ad valorem or percentage   **[1]**

   The name of a tax, such as value-added tax, may not be accepted

     (ii) Outline the reason for your answer to part (e)(i).   **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*Vague response.*	1
	The change in "d" value (the coefficient of P) changes the slope of the supply curve **OR** the idea that the supply curve becomes steeper with an ad valorem tax.	
2	*Accurate response.*	2
	For outlining that as price / quantity increases, the size of the tax also increases – consistent with *ad valorem* – causing the supply curve to be steeper as a result of the change in the coefficient.	

To achieve level 2, the response must refer to the change in the coefficient of price (the "d" value) and to the change in the size of the tax as price/quantity increases.

(f)   (i)   The government decides to impose a $3 per unit tax on this perfectly
            competitive market. Plot and label the market supply curve following the
            imposition of this tax in the grid on **page 3**.   **[1]**
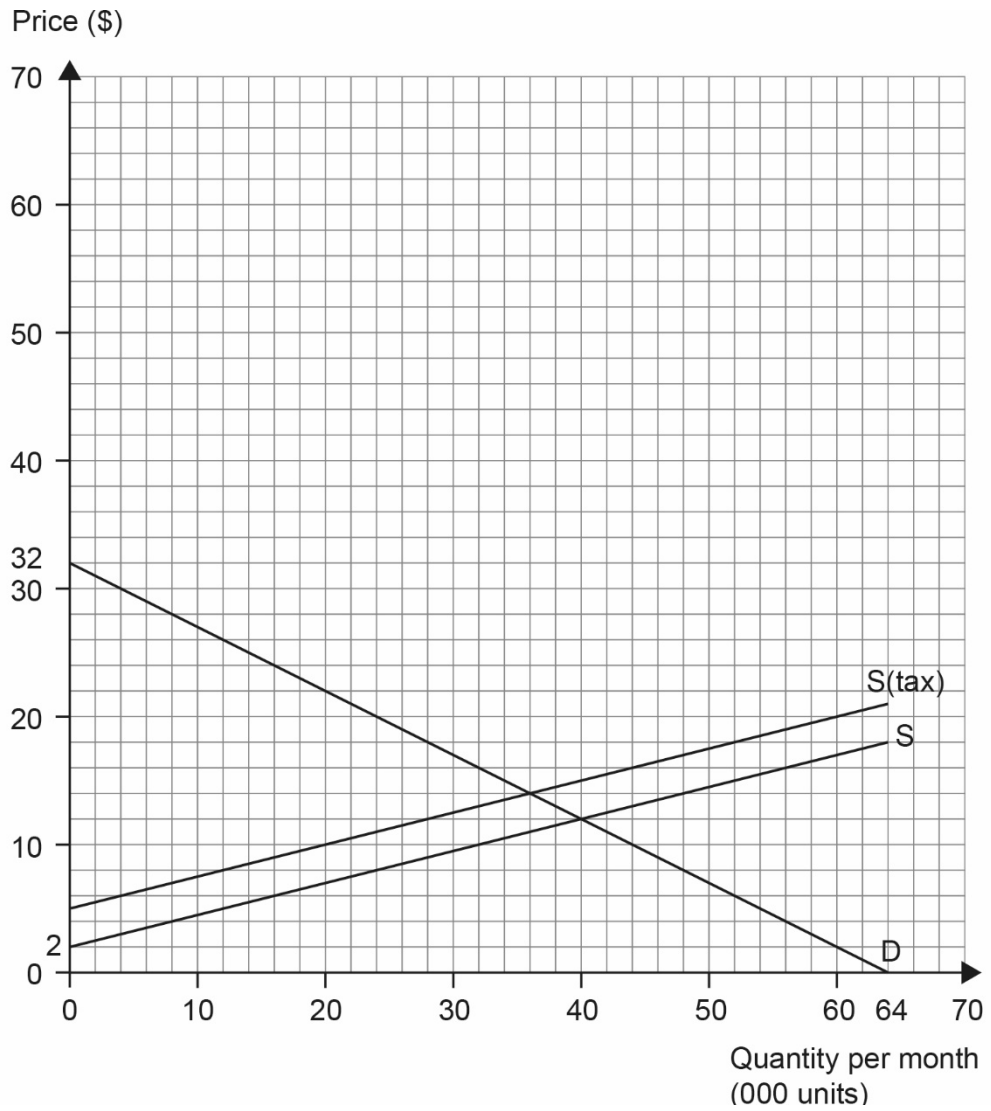
For a correctly plotted and labelled new supply curve $3 above the original
supply curve.   **[1]**

OFR applies.

(ii)   Calculate the resulting consumer expenditure **and** producer revenue **and**
       government tax revenue following the imposition of the $3 per unit tax.   **[3]**

Consumer expenditure
14 × 36 000
$504 000   **[1]**
An answer of $504 000 (without workings) is sufficient for [1].

Producer revenue
11 × 36 000
$396 000   **[1]**
An answer of $396 000 (without workings) is sufficient for [1].

Tax revenue
3 × 36 000
*$108 000*   **[1]**
An answer of $108 000 (without workings) is sufficient for [1].

*The tax revenue may also be calculated by subtracting producer revenue from
consumer expenditure.*

*OFR applies. Examiners will need to examine the graph carefully and reward
valid working.*

(g)   (i)   In the following grid, sketch an appropriate marginal cost (MC) curve, if q* is
the profit maximizing level of output for a perfectly competitive firm and the
market determined price for the good is $20 per unit.   **[1]**
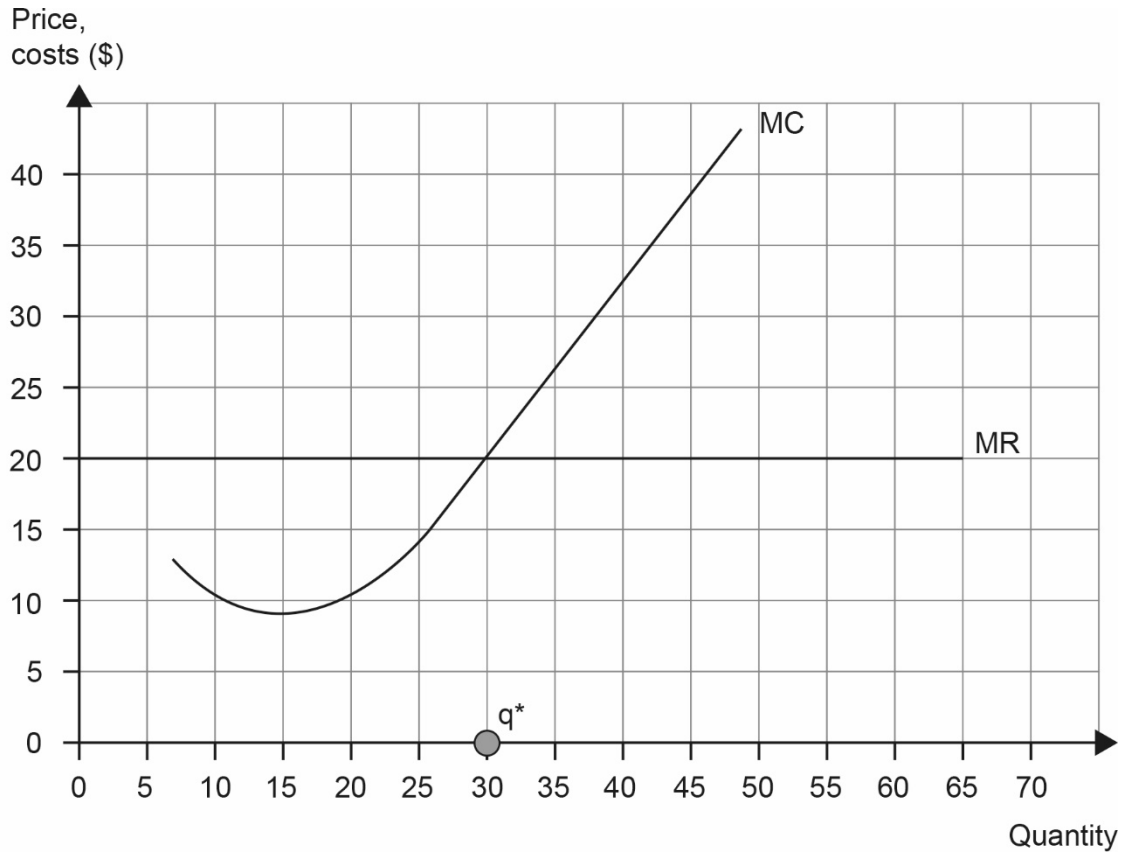
For a correctly sketched MC curve that intersects the horizontal at $20.00 MR
above q*. The MC curve must cut the $20 line from below ie minimum MC
must be below $20   **[1]**

*A diagram which includes (a range of) inaccurate curves, such as downward-
sloping MR/AR, should be given **[0]** marks.*

A labelled MR (or P) curve is not necessary for part (i) or for part (ii).

(ii)   In the grid above, sketch an average total cost (ATC) curve that would result in
        economic losses for this firm.   **[1]**

Price,
costs ($)
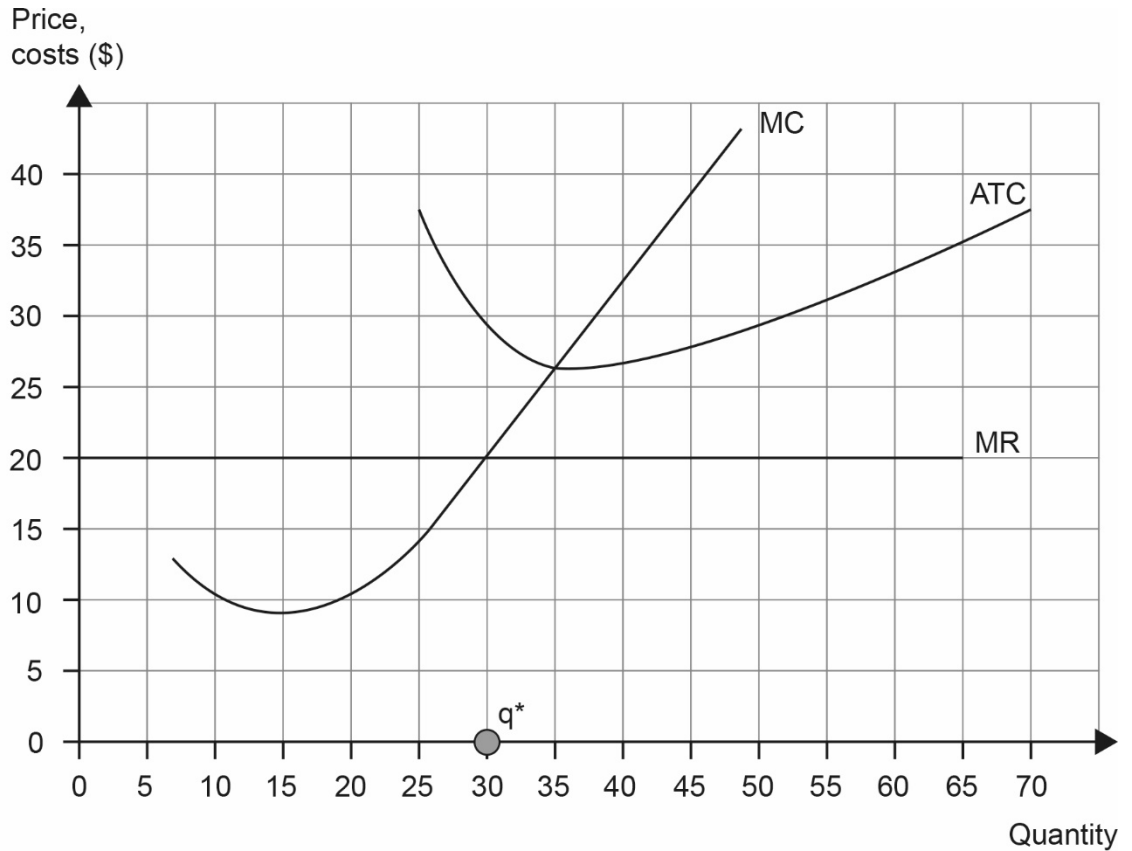
For a correctly sketched U shaped ATC lying above MR=AR=20 at all
quantities and with the MC curve intersecting the ATC at the minimum ATC.   **[1]**

A labelled MR (or P) curve is not necessary for part (i) or for part (ii).

(h)   If a perfectly competitive firm aiming at profit maximization is producing at a level of
       output for which marginal revenue (MR) > marginal cost (MC), state what action the
       firm should take with respect to its level of output.   **[1]**

It should increase output.   **[1]**

(i)   Using an appropriate diagram, explain when a loss-making perfectly competitive firm will shut down in the short run.   **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*The written response is limited.*	1–2
	For a diagram which shows price below a U-shaped AVC curve, with explanation that the firm would shut down if price falls below AVC **Or** an explanation that in the short run a firm faces fixed costs which are unavoidable so it will shut down if the price is less than minimum AVC as at any level of output it would lose more than the unavoidable fixed costs	
2	*The written response is accurate.*	3–4
	For a diagram which shows price below a U-shaped AVC curve, with explanation that the firm would shut down if price falls below AVC **AND** an explanation that in the short run a firm faces fixed costs which are unavoidable so it will shut down if the price is less than minimum AVC as at any level of output it would lose more than the unavoidable fixed costs	

A response which explains accurately that, if AVC < P < ATC, the firm should NOT shut down, may be fully rewarded.

2. (a) Calculate the annual import expenditure on quinoa under free trade. **[2]**

(120 – 20) x 4 **[1]**

Any valid working is sufficient for [1]

= US$400 million **[1]**

An answer of $400 million or 400 million without workings is sufficient for [1].

(b) (i) Define the term *consumer surplus*. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*Vague definition.*	1
	The benefit that consumers enjoy **OR** the area between the demand curve and the "price line".	
2	*Accurate definition.*	2
	The difference between how much consumers are willing to spend (or, to pay) and what they actually spend (or, pay). **OR** the Idea that it is the difference between benefit/utility/satisfaction received and the price/expenditure.	

(ii) Calculate the size of the consumer surplus under free trade. **[2]**

[(16 – 4) x 120]/2 **[1]**

*Any valid working is sufficient for [1].*

= US$720 million **[1]**

An answer of $720 million or 720 million without workings is sufficient for [1].

(c) (i) Explain **one** way in which the effect of imposing a tariff is likely to be different from that of imposing a quota. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*For **one** difference vaguely explained*	1
	Possible responses include: • a quota affects the volume of imports while a tariff affects the price • a quota has a certain effect on the volume of imports while a tariff does not • a tariff leads to tariff revenues but a quota does not.	
2	*Clear explanation of **one** difference*	2
	Possible responses include: • a quota is a quantitative restriction so it affects the volume of imports while a tariff is a tax on imports so it affects the price of imports • a quota being a quantitative restriction has a certain effect on the volume of imports while the effect of a tariff is uncertain • a tariff leads to tariff revenues but a quota does not lead to tariff revenues because it is a restriction on quantity (imported) OR because others receive the revenue/rent.	

(ii)   On the diagram on **page 8**, draw and label Fairsea's new quinoa supply curve
following the introduction of the quota.   **[1]**

Price per kg (US$)

Quantity per year (millions of kg)
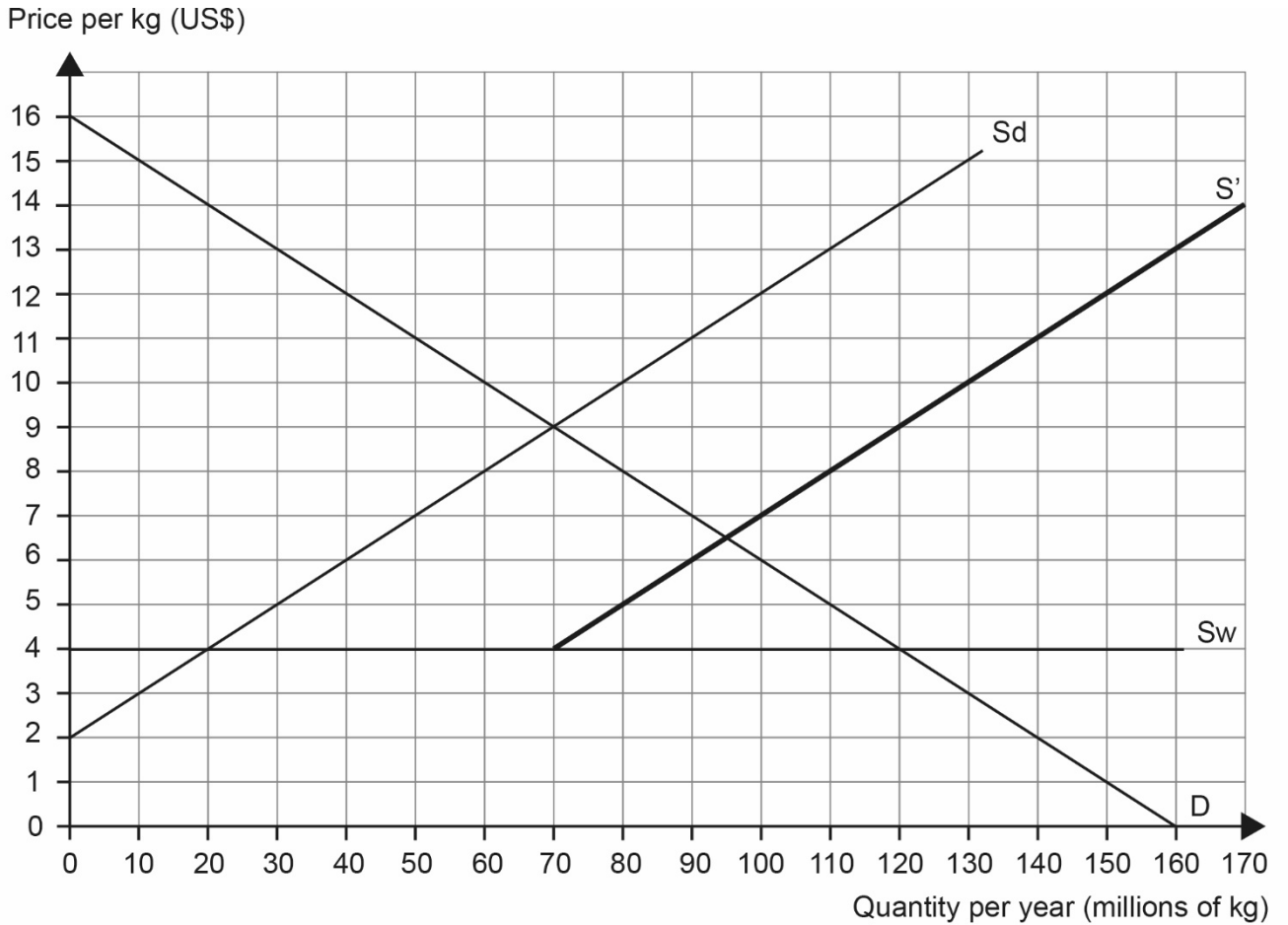
For an accurate, labelled supply curve.   **[1]**

*N.B.: Technically, the new supply curve has three distinct segments but we
expect only the third segment (where p > $4).*

OFR applies if the quantity of imports has been calculated incorrectly in 2a.

(iii) Determine the new equilibrium price of quinoa in Fairsea.   **[1]**

US$6.50   **[1]**

OFR applies from part (c)(ii).

(d) Using the diagram, explain **two** benefits enjoyed by Fairsea farmers following the introduction of the quota. **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*The written response is limited.*	1–2
	For a limited explanation of **one** benefit, award a maximum of *[1]*. For an accurate explanation of **one** benefit **or** a limited explanation of **two** benefits, award a maximum of *[2]*. Benefits **may** include: • enjoying a higher price • greater volume of sales • greater revenues / profits • higher producer surplus • less competition faced from foreign producers • economies of scale • any other valid response.	
2	*The written response is accurate.*	3–4
	For providing an accurate explanation of **one** benefit **and** a limited explanation of a second benefit, award a maximum of *[3]*. For providing **two** accurate benefits, award a maximum of *[4]*. Accurate explanations **may** include: • the restricted supply of quinoa in the domestic market permits them to enjoy a higher price as they were selling quinoa at US$4.00 per kilogram and now they may sell at US$6.50 per kilogram • as a result of the higher price they can increase the quantity they offer from selling 20 million kilograms of quinoa per year and now they sell 45 million kilograms of quinoa per year • since they sell more quinoa at a higher price they earn more revenues per period, (from (4 x 20) to (6.50 x 45)) • since they sell more at a higher price they enjoy a greater producer surplus (20 to 101.25) • less competition from foreign producers as imports decrease from 100 to 50 • any other valid response. Award a maximum of *[3]* if no reference is made to figures or the diagram, or if the figures are not all correct. The main benefits relate to a higher price, greater quantity, increased revenue, less competition and increased producer surplus. A candidate who includes two of these in one explanation may be fully rewarded. So the third bullet point above would earn 4 marks.	

(e) (i) Given the above exchange rates, calculate the current exchange rate between the euro and the Fairsea dinar. **[2]**

$$€1.00 = US\$1.12 \times \frac{FD0.35}{US\$1.00}$$ **[1]**

Any valid working is sufficient for [1].
$= FD\, 0.39$ **[1]**

An answer of 0.39 or FD 0.39 without workings is sufficient for [1].

Accept also FD1 = €2.55 or €2.56

(ii) Using your answers to part (b)(ii) and (c)(ii), calculate in Fairsea dinars the change in the consumer surplus following the introduction of the quota. **[3]**

Initially US$720 million
Now:
(9.5 x 95)/2
$= US\$451.25$ million **[1]**

OFR applies.

451.25 – 720
Any valid working is sufficient for [1].
$= -\,US\$268.75$ million **[1]**

OFR may be applied if either the initial or the final consumer surplus is correct and the subtraction is performed correctly

$= -\,268.75 \times 0.35$
$= -\,FD\, 94.06$ million **[1]**

OFR applies ie if an incorrect US$ figure is converted correctly into FD, then [1] mark may be awarded ie the mark is awarded for accurately converting a US$ figure to a FD figure.

(iii)   Calculate the change in export revenues of foreign farmers (in US dollars) following the introduction of the quota, assuming that they sell their quinoa at the new Fairsea market price.   **[2]**

Initial export revenues in US$ = initial import expenditures earlier:
$100 \times 4 = \$400$ million
New export revenues:
$50 \times 6.5 = US\$325$ million   **[1]**

Change:
$325 - 400$

*Any valid working is sufficient for **[1]**. Identification of initial export revenues as equal to initial import expenditures may constitute valid working.*

$= - US\$75$ million   **[1]**

*An answer of – US$75 million or 75 million without workings is sufficient for **[1]**.*

OFR applies.

(f) The US central bank decides to increase US interest rates. As a result, many financial investors switch their Fairsea dinar deposits into US dollars. Explain **one** advantage and **one** disadvantage for the Fairsea economy from the expected change in the value of the Fairsea dinar.   **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*The written response is limited.*	1–2
	For a limited explanation of **one** advantage **or one** disadvantage, award a maximum of *[1]*. For an accurate explanation of **one** advantage **or one** disadvantage **or** a limited explanation of **one** advantage **and one** disadvantage, award a maximum of *[2]*. Advantages **may** include: • exports more competitive • imports less attractive • import competing firms benefit • net exports rise • current account improves • aggregate demand increases • growth accelerates • employment rises – unemployment falls • any other valid advantage. Disadvantages **may** include: • risk of demand-pull inflation • risk of cost-push inflation • domestic firms importing inputs suffer • income distribution may become more unequal • firms have less incentive to cut costs – drive for efficiency suffers • terms of trade deteriorate • Fairsea central bank raise interest rates and subsequent disadvantages • any other valid disadvantage.	
2	*The written response is accurate*	3–4
	For providing an accurate explanation of **one** advantage **or one** disadvantage **and** a limited explanation of **one** disadvantage **or one** advantage, award a maximum of *[3]*. For providing an accurate explanation of **one** advantage **and** an accurate explanation of **one** disadvantage, award a maximum of *[4]*. Accurate explanations of advantages **may** include: (above with some explanation) Any other valid explanation. Accurate explanations of disadvantages **may** include: (above with some explanation) Any other valid explanation.	

N.B.: *only* **one** *effect is required.*

*A candidate who incorrectly identifies an appreciation, but then explains the effects of appreciation accurately, may earn a maximum of **[2]** marks if **both** an advantage and a disadvantage are explained. **[1]** mark may be awarded if either explanation is limited.*

3. (a) Calculate the gross domestic product (GDP) of Country X for 2016. **[2]**

C + I + G + (X – M) = 4590 + 1130 + 640 + (980 – 1045) **[1]**

Any valid working is sufficient for [1]

= $6295 million **[1]**

An answer of $6295 million or 6295 without any workings is sufficient for [1].

(b) Calculate the gross national product (GNP) of Country X for 2016. **[2]**

GDP + net property income from abroad = 6295 + 435 – 482 **[1]**

Any valid working is sufficient for [1]

= $6248 million **[1]**

An answer of $6248 million or 6248 without any workings is sufficient for [1].

OFR applies.

(c) (i) Calculate real GDP for Country X for 2012 **and** 2013. Enter your answers in **Table 2**. **[2]**

Year	Nominal GDP ($ million)	GDP deflator	Real GDP
2011	4620	90.95	
2012	4865	91.61	5310.56
2013	5100	94.32	5407.12
2014	5730	100.00	
2015	6000	101.23	

2012: $5310.56 million – an answer of 5310.56 is sufficient. **[1]**
2013: $5407.12 million – an answer of 5407.12 is sufficient. **[1]**

Responses written in either the table or in the text box should be rewarded.

A candidate who uses 2011 as a base year (and hence produces answers of 4892.95 and 4917.78) may be fully rewarded

(ii) Using your answers to part (c)(i), calculate the rate of economic growth for 2013. **[2]**

$$\frac{5407.12 - 5310.56}{5310.56} \times 100$$ **[1]**

Any valid working is sufficient for [1]
$= 1.82\%$ **[1]**

An answer of 1.82 % or 1.82 without workings is sufficient for [1].

OFR applies.

(d) (i) Outline the likely effects on a country's balance of trade of a high rate of economic growth. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*Vague outline.*	1
	For the idea that higher incomes will lead to more imports **or** that higher incomes will worsen the balance of trade. **OR** For reference to export-led growth so that exports increase **or** improve the balance of trade. **OR** that economic growth may lead to inflation, which would reduce exports/increase imports o*r* that economic growth **may** worsen the trade balance.	
2	*Accurate outline.*	2
	For outlining that higher incomes lead to an increase in imports which will worsen the balance of trade. **OR** For outlining that export-led growth will be caused by/result in an increase in exports, and hence the balance of trade will improve. **OR** that economic growth may lead to inflation, which would reduce exports/increase imports and worsen the trade balance.	

A response which explains that growth leads to a currency appreciation may be awarded a maximum of [1] mark, unless there is reference to export-led growth.

(ii) Apart from the effect on the balance of trade, state **one other** possible consequence for Country X of a high rate of economic growth. **[1]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	Responses **may** include: • employment rises • higher living standards • increased tax revenue • economic development • impact on the distribution of income • environmental impacts • currency appreciation • currency depreciation • inflation **OR** lower inflation (supply-side growth) • any other reasonable response.	1

(e) (i) A politician in Country X has stated that "Our tax system is inequitable as it is regressive". Explain this statement using the data in **Table 3**.   **[4]**

| Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*The response is limited.*	1–2
	For the idea that a tax is regressive if the average tax rate decreases as income increases	
2	*The response is accurate.*	3–4
	For the idea that a tax is regressive if the average tax rate (ATR) decreases as income increases and since the ATR (or % paid) here is decreasing from 21.75 % (0.22) to 20.25 % (0.20) to 19.28 % (0.19) (2 percentages are sufficient) then the tax system of country X is regressive. Therefore, those on higher incomes pay proportionately less, making the tax system unfair.	

(ii) Apart from taxation, state **two other** measures which could be taken by a government to make the distribution of income more equitable.   **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	Responses **may** include: • subsidize socially desirable goods and services • increase transfer payments • measures to promote equality of opportunity • increase/impose a minimum wage • introduce price controls • any other reasonable response. *Award [1] for each measure stated up to a maximum of [2].* *Two types of transfer payment, or two types of subsidy/direct provision, may be awarded a maximum of [1] mark.*	1–2

(f)   (i)   On the diagram, draw and label the new aggregate demand curve.   **[1]**

Average price level
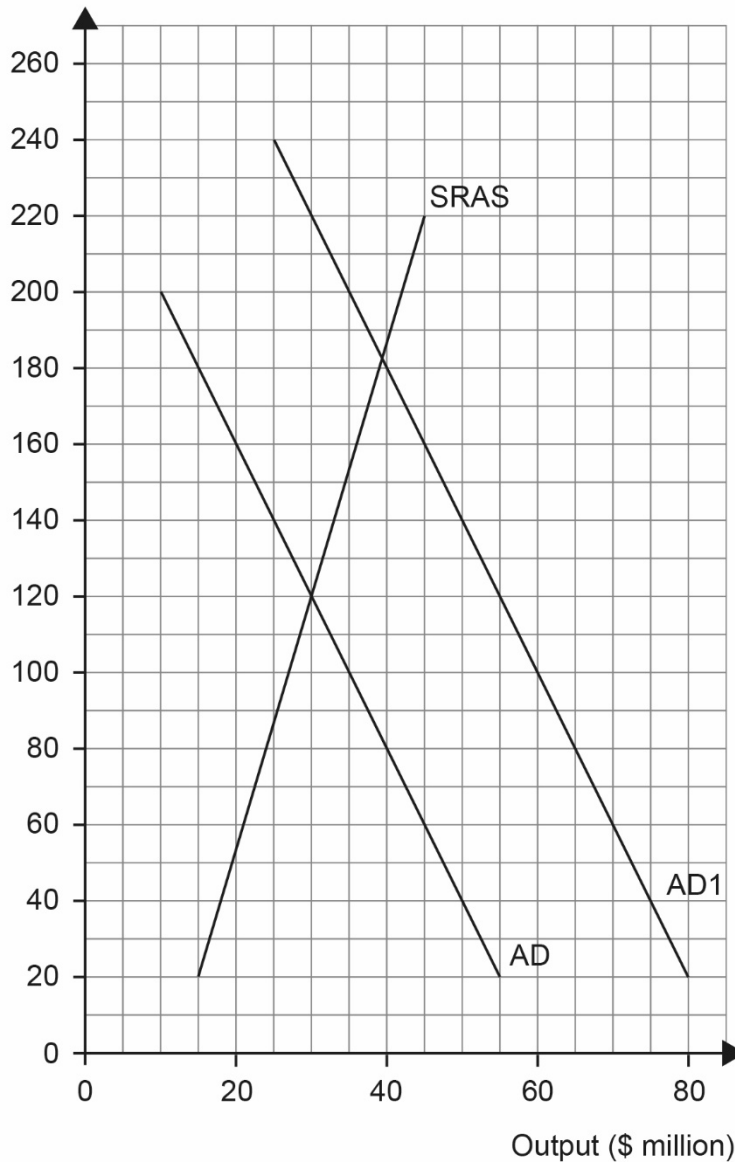
For a correct, labelled curve.   **[1]**

(ii) Determine the average price level once the economy has returned to a
      position of long-run equilibrium.   **[1]**

220   **[1]**

Examiners should not penalise the use of units such as $ or millions.

(iii) Explain how the economy would move back to this position of long-run equilibrium. **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*The response is limited.*	1–2
	For the idea that the new short-run equilibrium will exert upward pressure on the APL and thus on wages (which are assumed flexible in the long run). The increase in wages will shift SRAS left.	
2	*The response is accurate.*	3–4
	For the idea that the new short-run equilibrium will exert upward pressure on the APL and thus on wages (which are assumed flexible in the long run). The increase in wages will increase production costs shifting the SRAS left until equilibrium output is equal to potential output and long-run equilibrium is restored.	

For Level 2, reference should be made to increasing wages and the restoration of equilibrium at potential output.

(g) Outline how **one** incentive-related supply-side policy would help to boost aggregate supply. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	0
1	*Vague outline.*	1
	For reference to personal income tax cuts. *OR* For reference to cuts in business tax. *OR* For reference to cuts in capital gains tax.	
2	*Accurate outline.*	2
	For outlining that personal income tax cuts aim at increasing the incentive to work and therefore increase the size of the labour force. *OR* For outlining that cuts in business tax aim at increasing the incentive to invest, leading to an increase in the quantity/quality of capital. *OR* For outlining that cuts in capital gains tax aim at increasing the incentive to invest, leading to an increase in the quantity/quality of capital.	