Markscheme

November 2015

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. To do this you will need to use the on-page comment annotation tool (T).**

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)   On the diagram, plot and label the supply curve for sunglasses in Picton.   **[2]**

For an accurate supply curve.   **[1]**
For an accurate, labelled supply curve.   **[1]**
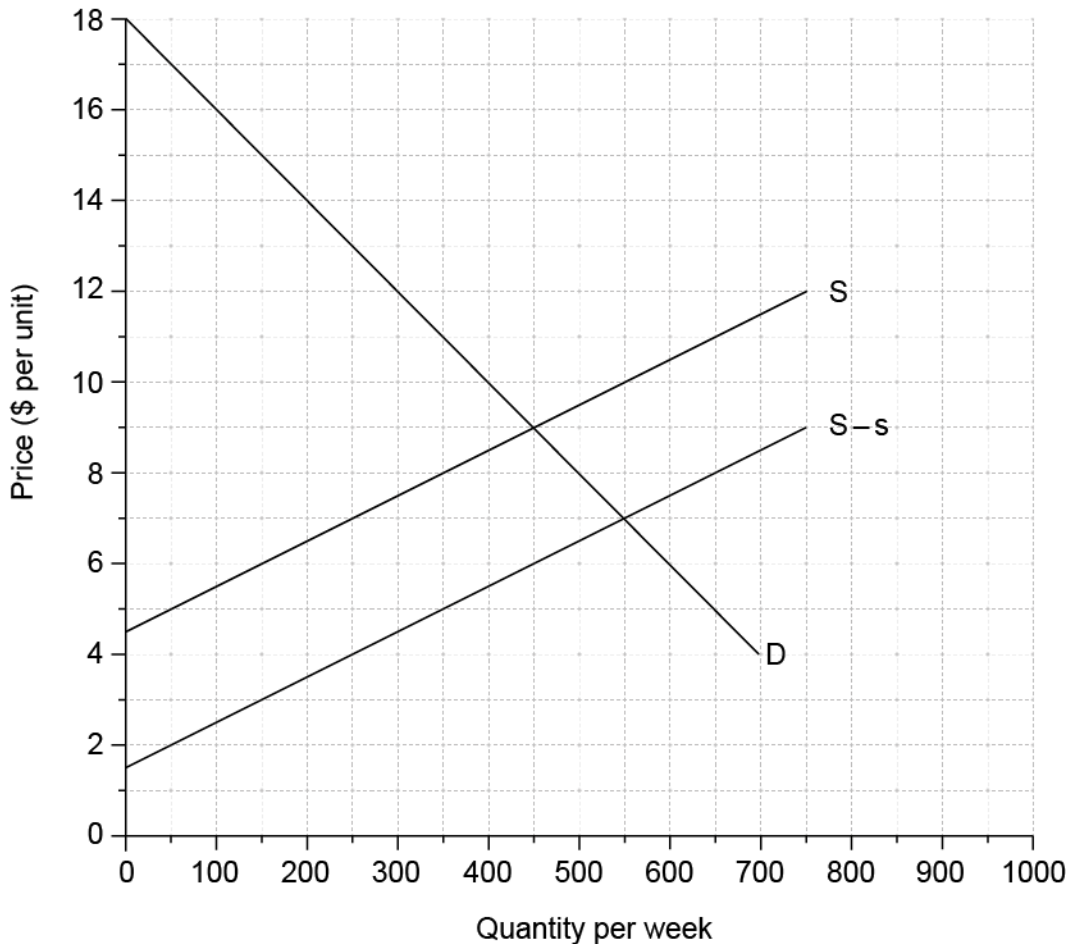
(ii)   Using the diagram, identify the equilibrium price and quantity.   **[1]**

P = $9, Q = 450   **[1]**

N.B. **In the case of inaccurate supply curves, OFR must be applied throughout Question 1.**

(iii)   State the price at which 50 pairs of sunglasses will be supplied.   **[1]**

$5   **[1]**

(b)   The government decides to grant a subsidy of $3 per pair of sunglasses.

(i)   On the diagram, plot and label an appropriate curve to show the effect of the subsidy.   **[2]**

For a labelled supply curve which is parallel to the original curve and which lies $3 below it, award **[2]**.

For a labelled supply curve which is parallel and below the original curve, but which is not $3 below, award **[1]**.

Any appropriate label, including S–s or S+s, should be rewarded.

A correct curve with a missing or incorrect label may be awarded **[1]**

(ii)   Calculate the excess demand or supply at the original equilibrium price.   **[2]**

750 – 450   **[1]**
= 300   **[1]**

*A response of 300 is sufficient for **[1]** (even if workings are incorrect).*

(iii)   State the new equilibrium price and quantity.   **[1]**

P = $7, Q = 550   **[1]**

(c)   With reference to the diagram on page 2, analyse how the subsidy results in a new market
       equilibrium and therefore a reallocation of resources used for the supply of sunglasses.   **[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 the idea that the subsidy reduces costs / increases profitability, and so
acts as an incentive for producers to devote more resources to the supply
of sunglasses.

For [1] to be awarded candidates should explain **one** of the following:
- that cost reduction / increased profitability will lead to an increase in supply
- therefore, equilibrium price will decrease and the level of output will increase
- output would increase from 450 to 550.

For [2] to be awarded reference must be made to the idea that more
resources will be used/allocated in the production of the good.

Level		Marks
2	*The written response is accurate.*	**3–4**

A subsidy reduces costs / increases profitability, and so acts as an
incentive for firms to supply more. The result of the subsidy is that the
equilibrium price has decreased (from $9 to $7) and quantity has increased
from 450 to 550. In order to increase output, firms must allocate more
resources to the production of the product.

For [4] to be awarded the following points must be provided:
That cost reduction / increased profitability will lead to an increase in supply
- therefore, equilibrium price will decrease and the level of output will increase
- output would increase from 450 to 550
- and this would require the use of more resources.

If a meaningful use of alternative figures [*eg* price falls from ($9 to $7) is
provided then the inclusion of "from 450 to 550" is not necessary.

(d)   (i)   Define the term *producer surplus*.   **[2]**

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*Vague definition.*	**1**

The idea that a firm earns more than it requires.

Level		Marks
2	*Accurate definition.*	**2**

An explanation that it is the amount of actual earnings which a
producer makes over and above the amount the producer would be
prepared to accept for that output **or** the price received by a producer
in excess of the price at which the producer would be willing and able
to offer for sale.

(ii) Calculate the level of government expenditure necessary to fund this subsidy.   **[2]**

3×550 **[1]**
$= \$1650$ **[1]**

An answer of 1650 is sufficient for [1].

(iii) Calculate the change in consumer surplus resulting from the subsidy.   **[2]**

Initial CS $= 9 \times 450 \times .5 = 2025$
Final CS $= 11 \times 550 \times .5 = 3025$ **[1]**

Any valid working is sufficient for [1].

Change in CS $= 3025 - 2025 = \$1000$ **[1]**

N.B. *An alternative approach, with valid workings, should be fully rewarded.*

For example: Change in CS $= 0.5 \times (550 + 450) \times 2$ (measuring the area of the trapezium).

Any valid working is sufficient for [1].

$= \$1000$

(iv) Calculate the change in producer surplus resulting from the subsidy.   **[2]**

Initial PS $= 4.5 \times 450 \times .5 = 1012.50$
Final PS $= 5.5 \times 550 \times .5 = 1512.50$ **[1]**

Any valid working is sufficient for [1].

Change in PS $= 1512.50 - 1012.50 = \$500$ **[1]**

N.B. *An alternative approach, with valid workings, should be fully rewarded.*

For example: Change in PS $\frac{(550+450)}{2} \times 1$ (measuring the area of the trapezium).

Any valid working is sufficient for [1].

$= \$500$

(e)   With reference to the diagram on page 2 and your answers to part (d), explain how the
       subsidy will impact on allocative efficiency in the market for sunglasses in Picton.   **[4]**

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For an explanation that as the market equilibrium moves away from a free market position consistent with allocative efficiency, the market will no longer achieve allocative efficiency.	**1–2**
2	*The written response is accurate.* Initially the market is in a position of allocative efficiency. However, the subsidy will cause changes in welfare to stakeholders. Although consumer surplus will increase (by $1000) and producer surplus will increase (by $500), the government expenditure (of $1650) exceeds the gains and so the welfare will decrease. Thus a subsidy will move the market away from a position of allocative efficiency. Any valid alternative such as the one below should be rewarded: There is a net welfare loss because the subsidy causes additional units (from 450 to 550) to be produced which are valued by society less than the cost of producing them.	**3–4**

2. (a) Identify whether this firm is in perfect competition. You **must** give a reason for your
              choice.   **[2]**

       This firm is not a perfect competitor   **[1]**

       It is facing a negatively sloped demand curve (or, price is not equal/exceeds MR, or,
       MR lies below AR)   **[1]**

(b) Identify the profit maximizing level of output for this firm. You **must** give a reason for your
       choice.   **[2]**

       Profit maximizing level of output is 17 000   **[1]**
       At that level of output, MR = MC   **[1]**

       N.B. *A candidate cannot be awarded a mark for outlining the reason unless they
       have identified the correct level of output.*

(c) Calculate the total revenues **and** the total costs **and** the profits or losses for this firm at the profit maximizing level of output.   **[3]**

$TR = \$20.00 \times 17\,000 = \$340\,000$ **[1]**
$TC = \$11.00 \times 17\,000 = \$187\,000$ **[1]**
$Profit = TR - TC = \$340\,000 - \$187\,000 = \$153\,000$ of profits   **[1]**

OFR applies for the third mark.

Workings are not required for any of the responses.

If the dollar sign is not present in each of the three steps then a maximum of 2 marks may be awarded.

(d) Identify the level of output this firm would choose if instead of profit it aimed at maximizing revenues. You **must** give a reason for your choice.   **[2]**

20 000   **[1]**
At that level of output, $MR = 0$ **[1]**

(e) Explain the meaning of the term "allocative efficiency" and its implication for social (community) surplus.   **[4]**

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For explaining that allocative efficiency refers to the allocation of resources in an economy and that resources are allocated in the best possible way **or** that social/community surplus is maximized.	**1–2**
2	*The written response is accurate.* For explaining that allocative efficiency means that resources are allocated in the best possible way **and** as a result just the right amount of the good is produced from society's point of view so that social/community surplus (the sum of consumer and producer surplus) is maximized. For the 4 marks to be awarded the following points must be provided: • explicit reference to the use of resources • that resources are use in the best possible way • that just the right amount of the good is produced from society's point of view (or reference to stakeholders *eg* consumer and producer surplus) • that social/community surplus is maximized.	**3–4**

(f)   Referring to the diagram on page 6, identify the level of output that should be
       produced for allocative efficiency to be achieved. You **must** give a reason for
       your choice.   **[2]**

       At 26 000   **[1]**
       At that level of output, P (or AR) = MC   **[1]**

       N.B. A candidate cannot be awarded a mark for outlining the reason unless they
       have identified the correct level of output.

(g)   Define the term *productive efficiency*.   **[2]**

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*Vague definition.* For the idea that production takes place with low costs.	**1**
2	*Accurate definition.* An explanation that it exists if production takes place at minimum AC or where MC = AC.	**2**

(h)   Calculate the price elasticity of demand when the price decreases from $18.00
       per unit to $12.00 per unit.   **[2]**

$$PED = \frac{\%\Delta Qd}{\%\Delta P} = \frac{30\%}{-33.33\%} = 0.91 \text{ or} -0.91$$ **[1]**

       A response of 0.9 or − 0.9 should also be rewarded (using unrounded figure from
       GDC or using fractions).

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

       *An answer of 0.9 (or − 0.9) without any valid working is sufficient for **[1]** only.*

       Negative sign for ΔP and PED is not necessary.

       Candidates may use the midpoint formula; they should be fully rewarded (0.65).

(i)   With reference to the firm's revenues, comment on the price elasticity of demand
       at point F of the demand curve in the diagram on page 6.   **[2]**

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*Vague answer.* For stating that at point F it is equal to unity (PED = 1).	**1**
2	*Accurate answer.* For stating that at point F it is equal to unity as MR is equal to zero.	**2**

(j) Explain why a profit maximizing firm with monopoly power will never choose to operate on the inelastic portion of its average revenue curve. **[4]**

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.* For stating that if demand (AR) is inelastic then profits could be increased by reducing output and raising price. - If candidate refers only to an increase in revenues then 1 mark may be awarded.	**1–2**
2	*The written response is accurate.* For explaining that if demand (AR) is inelastic and price rises then TR will rise while, since less is produced, it follows that TC will fall. Hence decreasing output would increase profits. Therefore profits cannot be maximized while operating on the inelastic portion of the demand curve. **OR** Profit maximization requires that MR = MC. Since MR is negative in the inelastic region of a demand curve (lies below the horizontal axis) but MC cannot be negative it follows that MR and MC can be equated only in the elastic region.	**3–4**

3. (a) (i) Calculate the cost of this basket in 2013 **and** 2014. Enter your answers in **Table 1**. **[2]**

	Price per unit in Aceland dollars ($)	
	2013	**2014**
Pizza	12.50	12.90
Chocolate milk (litres)	1.15	1.25
Jazz concert	45.00	46.00
Total cost of the typical basket	**1548.00**	**1597.20**

$$(12.50 \times 48) + (1.15 \times 120) + (45 \times 18) = 1548.00$$ **[1]**

$$(12.90 \times 48) + (1.25 \times 120) + (46 \times 18) = 1597.20$$ **[1]**

Dollar sign is not required
Workings are not required

(ii) Using your results from part (a)(i), calculate a consumer price index (CPI) with 2013 as the base year. **[1]**

$$\frac{1597.2}{1548} \times 100 = 103.18$$ **[1]**

OFR applies
Workings are not necessary.

(iii) Calculate the rate of inflation in Aceland in 2014.   **[1]**

$$\frac{103.18 - 100}{100} \times 100 = 3.18\%$$
OR
$$\frac{1597.2 - 1548}{1548} \times 100 = 3.18\%$$ **[1]**

OFR applies
Workings are not necessary.

(b) Outline the reason why, in addition to a consumer price index (CPI), a producer
price index may also be useful to economists.   **[2]**

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*Vague response.* The idea that it is useful to predict future consumer price inflation.	**1**
2	*Accurate response.* For outlining that it is useful to predict future consumer price inflation, since if prices of producer goods increase then it is expected that consumer prices will follow.	**2**

(c) (i) Calculate Boarland's real GDP for 2008 **and** 2009 expressed in 2007
prices. Enter your answers in **Table 2**.   **[2]**

Year	2007	2008	2009	2010
Nominal GDP	20.7	21.9	22.6	22.3
GDP deflator	100.0	102.3	107.6	103.7
Real GDP	20.7	**21.41**	**21.0**	21.5

$$\frac{21.9}{102.3} \times 100 = 21.41$$ **[1]**

$$\frac{22.6}{107.6} \times 100 = 21$$ **[1]**

Dollar sign and billions not required
N.B: 24.4 is not accepted for 2008 (RE)

(ii) State the reason why a country's gross domestic product (GDP) may be
greater than its gross national income (GNI).   **[1]**

Factor (or, property) income paid (sent) abroad exceeds factor
(or, property) income earned (or, from) abroad.   **[1]**

(iii)   Calculate the rate of economic growth for Boarland in 2007–2008, 2008–2009 **and** 2009–2010.   **[3]**

Growth 2007–2008 = $\dfrac{21.41 - 20.7}{20.7} \times 100 = 3.43\%$ **[1]**

Growth 2008–2009 = $\dfrac{21 - 21.41}{21.41} \times 100 = -1.91\%$ **[1]**

Growth 2009–2010 = $\dfrac{21.5 - 21}{21} \times 100 = 2.38\%$ **[1]**

A response which does not specify percentage signs may be awarded a maximum of [2].
Workings are not required.

Alternative valid responses due to use of unrounded figures held in GDC:
2007-2008: 3.42%
2008-2009: -1.89% or -1.9%
2009-2010: 2.36%

NB OFR must apply if answers to (c)(i) are incorrect (*eg* if 21.4 was given as the real GDP of 2008 then the growth rates are: 3.38%, -1.87% and 2.38%).

(iv)   Using your answer to part (c)(iii), identify the year Boarland was in recession.   **[1]**

2009 (or, 2008-2009)   **[1]**

OFR applies.

Candidates are not required to outline a reason for their choice. The correct year above is sufficient for [1].

(v) Using the data in **Table 2** and your answers to part (c), explain how real GDP could decrease while nominal GDP is increasing. **[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 the change in real GDP depends on the ***relative*** changes in nominal GDP and in the average price level.	**1–2**
2	*The written response is accurate.* For explaining that real GDP is the ratio of nominal GDP to the average price level so that if nominal GDP increases but the average price level increases ***at a greater rate***, then real GDP decreases.	**3–4**

Responses must point out that between 2008 and 2009 nominal GDP increases from \$21.9 billion to \$22.6 billion, while at the same time the average price level increases ***at a greater rate*** (102.3 to 107.6). As a result, real GDP fell from \$21.41 billion to \$21 billion.

*Candidates who do not use their answers to part (c) may be awarded a maximum of **[3]**.*

(d) (i) Calculate the unemployment rate for Boarland in 2013. **[2]**

$$\text{Unemployment rate} = \frac{456\,400}{(2\,803\,600 + 456\,400)} \times 100 = 14\,\%$$ **[1]**

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

*An answer of 14 % or 14 without any valid working is sufficient for **[1]** only.*

(ii)   Outline **one** difficulty in measuring unemployment.   **[2]**

Level		Marks
0	*The work does not reach a standard described by the descriptors below.*	**0**
1	*The written response is limited.*	**1**

For a limited reference to one of the following:
- hidden unemployment
- underemployment
- misrepresentation of status by the "unemployed"
- any other valid response.

A response that refers to the quality of data collected should not be rewarded.

| 2 | *The written response is accurate.* | **2** |

For an accurate account of one of the following:
- hidden unemployment (individuals who do not actively seek work because they are discouraged)
- underemployment (individuals who are working part-time yet wish to work full-time or who have jobs that underutilize their skills and/or time)
- misrepresentation of status by the "unemployed" claiming to be unemployed while in fact they may be working
- any other valid response.

(iii) Explain **two** economic consequences of unemployment. **[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 limited explanation of one consequence, award a maximum of [1].* *For an accurate explanation of one consequence or a limited explanation of two consequences, award a maximum of [2].*	**1–2**

Consequences may include:
- a loss of GDP
- a loss of tax revenue
- increased cost of unemployment benefits
- loss of income for individuals / lower living standards
- greater disparities in the distribution of income
- deskilling of labour
- any other valid response.

Only **economic** consequences should be rewarded

| 2 | *The written response is accurate.* *For providing an accurate explanation of one consequence and a limited explanation of a second consequence, award a maximum of [3].* *For providing two accurate explanations, award a maximum of [4].* | **3–4** |

Accurate explanations may include:
- a loss of GDP (as output that could have been produced, never will be produced)
- a loss of tax revenue (as incomes and spending are lower and thus revenue from direct and indirect taxation will fall)
- increased cost of unemployment benefits (as transfer payments to the unemployed increase government expenditures)
- loss of income for individuals (as disposable income decreases, living standards will fall)
- greater disparities in the distribution of income (as some workers will lose their jobs then the number of low income households will increase)
- deskilling of labour leading to a loss of human capital
- any other valid response.